COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 19 NEW YORK, THURSDAY, MAY 19, 1921 Number 20

How You Can Put More Business in Government

SOME surgery on the executive branch of our government is in order. As usual, doctors disagree—major operations are recommended by some and others think that a few minor transfers are all that are necessary. Pure theorists have proposed that the departments should be recast, some of them renamed, and bureaus and functions thrown about with violent disregard for the feelings of those affected. One of the proposals that has been most generally aired is that of dismantling the Interior Department and creating a Department of Public Works. In this scheme the Bureau of Mines and the Geological Survey, with which the coal industry is most interested, are to be in the new department. Without going into detail, suffice it to say that these bureaus of the present Interior Department would be as out of place in a Department of Public Works as advocates of the change conceive them now to be in the Interior Department. The latest move proposed is contained in the Frelinghuysen coal-stabilization bill, which would take from the Geological Survey the work on coal statistics and place it in the Department of Commerce.

Aside from these more direct points of interest in the reorganization of the executive branch of our government the coal industry as a taxpayer is concerned in the movement because it promises to cut the cost of government and to promote better service. Assertions that such sums as $300,000,000 can be saved each year by relocating bureaus cannot be substantiated; more reasonable persons place the possible economies at less than 5 per cent of that figure, and it is probable that in the long run appropriations for the departments will show no decrease. The benefit to come is in better service to the public, in greater value per dollar of cost. Our government machine is huge and it is no wonder that inconsistencies have been permitted to develop. The Congress that creates new bureaus and passes out the money for specific tasks is as much to blame as those in the departments who have the more direct responsibilities.

The past score of years has seen recorded several ambitious attempts to reorganize the government departments and to make the government more efficient. Each attempt in turn has been strangled and thrown out of the window by the tremendous active opposition and the passive inertia of official Washington. In the present instance we have a commission composed of Walter F. Brown, who, according to the *Washington Star,* has been long a personal friend of the President, having acted as his floor manager at the Chicago convention last year, who is to be the representative of the President, and of Senator Smoot and Representative Treavis. This joint commission, under the McCormick bill, is to investigate and report to Congress on reorganization of the executive departments. Hearings are to be begun at once, it is reported.

It is significant that aside from Secretary Hoover, none of the department heads is on record as favoring such an investigation and any changes. Secretary Hoover, in the terms of the mining man, has a likely looking prospect from which a few "pockets" of good ore have been taken, but the proposition needs development. An organization must be built up, a system of mining determined upon best suited to the deposit, transportation to market—that is, avenues of publicity —constructed, and the product, "Aids to Industry," sold to the people of the United States. Plain enough, in the present department over which he presides there is not much that excites the envy of any other secretary, but in other departments there are services that, if taken over, will help him make of his work a success. Mr. Hoover has nothing to lose and everything to gain in reorganization. He is going to get little real support from the other departments and a great deal of open opposition and much that will be political and, therefore, not open. When he really starts he is going to have a real fight on his hands, one for which he has had no training and, we surmise, little liking. There is no precedent for a fight in the open on such matters.

Business and industry have much at stake in the Hoover plan to make of the Department of Commerce a real factor. Business has no other direct representation in the Cabinet of the President, while labor and agriculture have their advocates. We suspect that it was more to get Herbert Hoover, with his wide knowledge of foreign affairs, annexed to the administration that Mr. Harding made the selection, than because of any well-defined idea of making something real out of the Department of Commerce. In other words, despite the campaign slogan of "More business in government and less government in business," it may have been more or less of an accident that Hoover is secretary of the particular department in which he finds himself. But being there, he is going to make something worth while. Business needs what he wants to give it, but he can never get to first base without the support of business.

Two matters are of fundamental import to the success of his plans. One of these is reorganization within the executive departments that will give Commerce the duties, responsibilities and opportunities for service that are her due, and the other is money. We have already appraised the difficulties that beset the first and have only to mention the wave of economy in governmental expenditures to give a perspective on the second. But the difficulty of the task is not going to cause to falter the man who fed Belgium, then the Allies and finally Europe. Making a mine from an

abandoned prospect is a job for a successful mining engineer. Financial backing is a prerequisite, however, and in this instance the money must come from the public treasury, and the men in Congress must feel the pressure from back home before they loosen up even to the extent of giving the Department of Commerce as many dollars as would maintain one battalion of troops for one year, which is the amount Mr. Hoover has just asked of Congress.

We recognize that before any man in the coal industry—it is going to be a matter for individual action—urges and continues to urge his representatives in Congress to appropriate even such a comparatively small sum, that coal man must be convinced that he wants Hoover to have it and that it is going to help him and his business. Half-hearted support will get us nowhere. There must be enthusiasm arising from a vision of American business, and the coal industry in particular, in a new relation to the public through the government. The men of the coal industry are shy of anything that partakes of the fingers of government in its business, and it is important, therefore, to point out at the beginning that Mr. Hoover is plainly and completely on record as opposed to each and every form of regulation of business. Mr. Hoover is as much a man for business as ever "Billy" Wilson was the man for organized labor.

Take the blinders off and step up to this proposition with full appreciation of the situation. The urge for coal legislation is here and something is going to be put on the statute books this year. That the public is not buying coal as fast as it can be mined is no indication that they have lost interest. It is almost a sure thing that prices are going to take a sharp upturn before the end of this year, and it were better to have legislation now when high prices are in retrospection than later when they are again an actuality.

A rare opportunity is offered to the coal industry not only to have a hand in shaping its own destiny but in learning at first hand that a new deal is being opened for business. A business man in the President's Cabinet and a business man from the Senate are going to do, with the help of the coal men, what the coal men have not been able to do for themselves—namely, get that sort of recognition in Washington which is their due and get started on the road to a place of confidence in public esteem. The immediate discussions, however, will lead nowhere unless each man takes up the cudgels when he gets back home. There are two things he must back with all his might: Reorganization of the government's departments and more money for the Department of Commerce. There is just one way to push these to fruition: Tell your representative in Congress that you want them accomplished, and tell him often and vigorously. You and not Congress originate public opinion.

Too Successful by Far

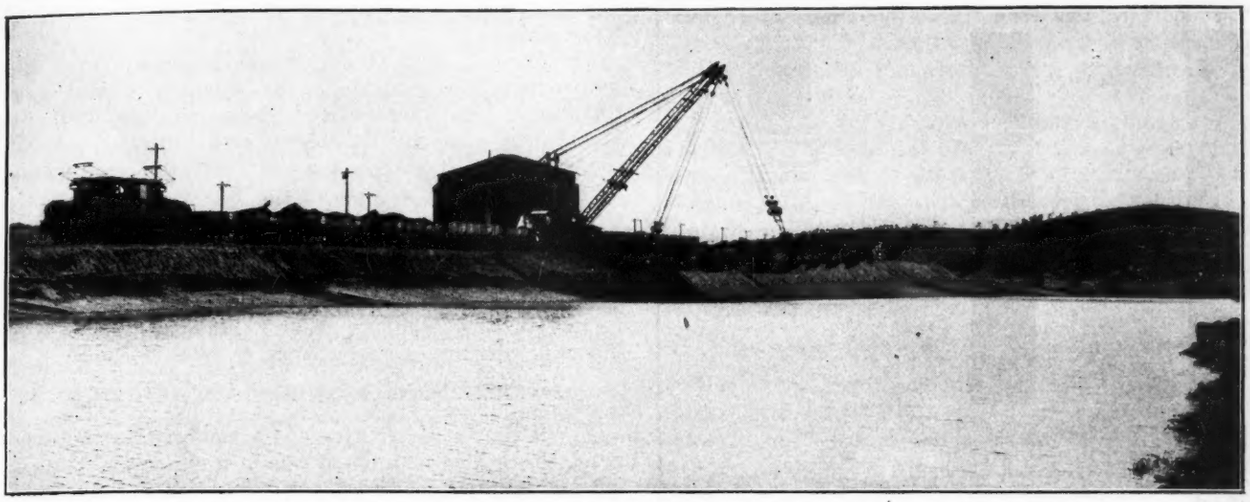
IN THE recent mine-cave legislation public clamor in Scranton has at last triumphed over justice, unless indeed the Governor intervenes and decides that the triumph is one of words and not of facts and therefore clearly against the interests of those for whom the legislation was passed. Over large parts of Scranton the owner of a property worth less than $5,000 was protected by the pledged and vindicated word of the coal companies, who promised to repair such structures when damaged. But that was not enough for the Scrantonians. Laws must be passed by which representatives of the state would receive funds adequate, and perhaps more than adequate, to offset injuries which, while extremely real, are the natural outcome of having bought properties over coal which is owned by the companies under deeds that give them the right to recover all mineral without any responsibility for surface support.

An attempt was made to compel the operating companies to accept the Fowler bill in order to escape the penalties of another instrument named after Representative Walter W. Kohler. The purpose was to make the coal companies sign away their rights or become criminally liable for the exercise of them. The companies refuse to be beguiled into any such a surrender, preferring to shut down their mines, as far as second mining is concerned, thus escaping the operation of both bills. Doing so, they will undermine the city financially by not removing coal as surely as they are undermining it physically by continuing to remove it. The value of the properties will be more surely destroyed than they could ever be by mining.

All the fine arguments of the casuists to the effect that to own a property implies the right to surface support, whether the deed calls for it or not, will by these acts be made of no avail. No one will want to live where no livelihood can be obtained. Scranton is beginning to see that the coal must be taken out of the ground if the city is not to be deserted. It has lived on the proceeds of the extraction of the coal. By leaving it in the ground the houses may be preserved, but no one will be desirous of using them as habitations.

The coal companies have been accused of being extremely careles sof human life and property, but what shall we say of those who have erected buildings where the right to remove all the coal from under them has already been sold? Is not a man lacking in a sense of duty to wife and family when he deliberately signs away his right to support and erects a building on ground for the undermining of which provision has been made in his deed? Is he not lacking in a sense of justice and equity when, having accepted such an instrument, he insists that it be regarded merely as a "scrap of paper" and that its provisions cannot be held as legal and binding?

Unfortunate indeed it would be if 15,000 to 20,000 mine workers and an unnumbered company of working men dependent on the general prosperity of the community were laid idle till the Kohler bill was duly tested. Regrettable, truly, would be loss of anthracite tonnage now derived from the fifteen collieries in the Scranton-Dunmore area alone, not to speak of those in other districts, for the amount of hard coal now available is altogether too small to supply the public needs. Unhappy, without question, it will be for the 800 property holders who were looking confidently to the companies to repair their buildings to find that nothing can be done till the operating concerns ascertain whether if they repair the damage done they will still be liable to payments under the Fowler bill. Mr. Mattes, who wrote the bills, and the lobbies which supported them may yet be indeed sorry that their zeal in company baiting has brought Scranton, its house owners, its mine workers and the coal-consuming public to such a sorry end.



LOADING SAND BY DRAGLINE EXCAVATOR FROM THE HUN RIVER, MANCHURIA, FOR SAND FILLING IN FUSHUN MINES

Manchurian Plant with Seam in Places Four Hundred Feet Thick Uses Sand Filling

Koreans Have Mined Fushun Coal for Six Hundred Years—Eight Underground Mines and Two Strip Pits Produce About Twelve Thousand Tons a Day—Deposit of Coal Contains Billion and a Quarter Tons—Sand for Flushing Taken from Rivers and Quarries

By N. Yamaoka*
New York City

PEACE between Japan and Russia was concluded at Portsmouth, N. H., in September, 1905, the treaty provisions giving to Japan control of the Kwantung Territory, which previously had been leased by China to Russia. They also put into the hands of the Japanese the southern portion of the Manchuria Ry. as far as Changchun. In the following year the South Manchuria Railway Co. was founded by imperial decree. This company took over the railway lines and subsidiary properties as well as the rights and privileges acquired from Russia. Reconstruction of the Antung-Mukden railway to standard gage was begun in 1909 after an agreement had been reached with the Chinese Government. Another agreement concluded with China confirmed the company's railway right in South Manchuria and Inner Mongolia.

Controls Many Activities Other Than Mines

The total length of the railway lines in operation is about 700 miles. The rolling stock consists of about 330 locomotives, 300 passenger cars and 4,800 freight cars. Freight, chiefly agricultural products, in 1919 amounted to about 10,000,000 tons with a revenue yield of 52,500,000 yen (roughly $26,250,000). Much of this freight was made up of soya beans, the great staple product of Manchuria, and its derivatives bean oil and bean cake.

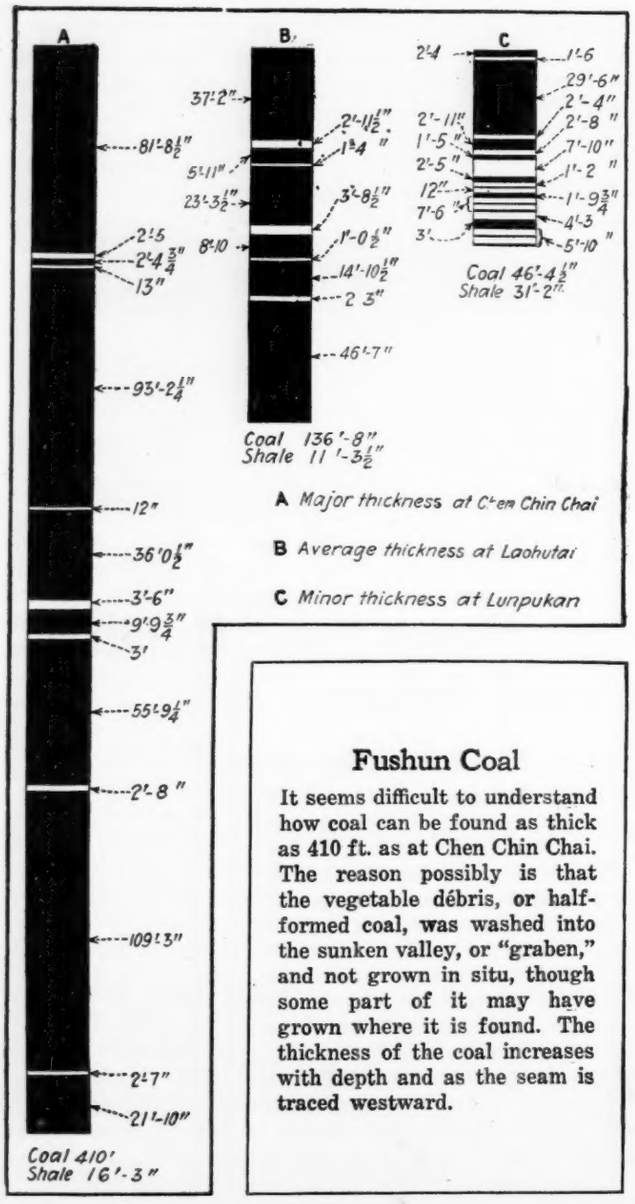
Obviously the activities of the company cannot be measured by its track mileage alone. This is insufficient to account for its large authorized capital stock of 440,000,000 yen ($220,000,000). In fact, the company's enterprises are manifold, embracing every phase of economic life in Manchuria. They include harbor administration, shipping, hotel establishments, coal mining at Fushun and Yentai, steel works at Anshan, electricity and gas supply, city building and administration as well as the organization of education and the maintenance of sanitation and a bureau of research. In addition to the railway lines owned by the company it has been intrusted with the management of the entire system of state railways in Chosen (Korea), having an aggregate length of about 1,000 miles.

From the inception of the company up to the end of 1919 369,000,000 yen ($184,500,000) had been invested in Manchurian enterprises. The assets are at present computed at 1,400,000,000 yen ($700,000,000) and compare favorably with the above figure. The gross revenue for the past administrative year amounted to 153,000,000 yen ($76,500,000). The employees of all ranks now number 45,000. These figures are self-explanatory and afford abundant proof of the vast extent of the company's business and its financial prosperity. An analysis of the foregoing will make it clear that the South Manchuria Ry. has accepted a large responsibility for the proper administration of Manchuria.

Fushun Field Worked for Six Hundred Years

The Fushun colliery with its abundant supply of coal is regarded as the source of power and wealth that will make profitable and practicable the large work undertaken by the South Manchuria Railway Co. This operation, a semi-bituminous coal mine, noted for its unrivalled thickness of bed, is situated about twenty-two

*Electrical engineer, South Manchuria Ry., 111 Broadway, N. Y.



Fushun Coal

It seems difficult to understand how coal can be found as thick as 410 ft. as at Chen Chin Chai. The reason possibly is that the vegetable débris, or half-formed coal, was washed into the sunken valley, or "graben," and not grown in situ, though some part of it may have grown where it is found. The thickness of the coal increases with depth and as the seam is traced westward.

miles as the crow flies east of Mukden. The field extends west to east for about ten miles parallel with the River Hun, which lies to the north. The field dips northward from 20 to 30 deg. and is one and one-half miles wide. During the last fifteen years the field has been well drilled and the condition of the coal is well known. At Suchiatun Junction, on the main line of the railway, a point 236 miles from Dairen and ten miles from Mukden, a branch line thirty miles in length leads off for Fushun. By railway Fushun is 266 miles from Dairen, 193 miles from Antung and 202 miles from Yingkow.

Coal in the Fushun district was first worked by the Koreans some six hundred years ago, being used by them in baking earthenware. On the occupation of this region by the Chinese, which took place about two hundred years ago, mining was entirely suspended by edict of the Chinese Government, Fushun being located in the vicinity of a suburb of Mukden, where stands the mausoleum of Tai-tsu, an emperor of the Li dynasty. During the Russo-Japanese War the mines were worked on a small scale by the Russians, but not until 1907, when the property was transferred to the South Manchuria Railway Co., was mining undertaken on a large scale.

On April 1, 1907, the company acquired from the government the coal mines at Fushun, Yentai and Chatzuyao, near Wafangtien. Again in July, 1907, in accordance with the Russo-Japanese railway protocol, the coal mines at Shihpeiling and Tachiatun were transferred to the company from the Russian Government. Of the above mines, only two, Fushun and Yentai, are being worked by the company, the operation at Chatzuyao being entrusted to private Japanese management, while those at Shihpeiling and Tachiatun were transferred to the Nanman Kogyo Kaisha (the South Manchuria Mining Co.) on April 8, 1918.

Japanese First Sink Shafts in Year 1911

At the time of acquisition of the collieries by the company, the mining equipment was of a temporary nature, with a daily output of only 360 tons in the aggregate from Chen Chin Chai, Yangpaipu and Laofutai pits. Consequently Dr. Matsuda, the first director of the Fushun colliery, conceived the plan of sinking two shafts, one at Chen Chin Chai and the other at Yangpaipu. These were completed in April and in June of 1911 and were named Oyama and Togo shafts respectively.

In 1914 an inclined shaft was opened at Wantau, the operation at this point being named the Wantau pit. In the same year open-cut working was started at Kuchengtzue, and in 1917 the Lumpo pit was opened for the purpose of supplying coking coal to the oven plant of the Anshan Iron Works. In the following year Hsingtun pit was opened at a point between Lumpo and Wantau pits.

The Fushun field is divided into five districts and worked by one stripping, two shafts and six pits, as follows, enumeration being made from west to east: Open cut working, Oyama shaft, and Chen Chin Chai pit in Oyama district, the Togo shafts and Yangpaipu pit in Togo district, Laofutai and Wantau pits in Laofutai district, and the Hsingtun and Lumpo pits also in Laofutai district.

The daily output of all the collieries on April 15, 1920, was approximately as follows:

	Tons		Tons
Kuchengtzu open cut	1,638	Laofutai pit	1,344
Chen Chin Chai open cut	1,179	Wantau pit	684
Chen Chin Chai pit	1,519	Hsingtun pit	135
Oyama shaft	2,033	Lumpo pit	516
Togo shaft	999		
Yangpaipu pit	1,693	Total	11,742

ANNUAL OUTPUT OF FUSHUN COLLIERY

(In Thousands of Tons)

Year	Open cut No. 1	No. 2	Chen Chin Chai	Oyama	Togo	Yangpaipu	Laofutai	Wantau	Hsingtung	Lumpo	Total
1907			103.3			64.5	65.5				233.3
1908			238.8			127.3	124.6				490.7
1909			324.1	0.1		176.1	192.7				693.2
1910			370.4	14.4	17.4	217.8	279.0				899.2
1911			404.9	186.4	146.6	301.6	285.0				1,324.5
1912			384.8	359.5	252.0	219.2	261.5				1,471.1
1913			579.5	421.1	414.9	290.7	473.0				2,179.2
1914	2.1		683.6	235.0	472.2	381.8	420.1				2,149.8
1915	102.7		623.1	301.6	430.4	471.8	179.4	53.4			2,162.6
1916	173.5		572.3	305.2	170.8	499.1	257.8	65.6			2,044.4
1917	272.3	0.2	602.7	135.7	291.4	598.0	295.5	110.7		5.1	2,311.4
1918	260.7	66.8	486.0	328.2	319.5	501.5	393.7	157.0		74.5	2,521.2
1919	231.3	300.4	307.6	406.4	319.3	454.7	405.0	164.7	18.1	155.2	2,762.7
											21,243.3

The Fushun coal field covers about fifteen square miles and extends, as stated, about ten miles in an east-west direction along the valley of the River Hun. The

main coal bed consists of only one measure that reaches like a belt across this boundary. The thickness of the bed varies from 50 ft. upward, increasing with depth and to the westward. It averages about 150 ft. At the western end of the property it expands greatly, becoming as much as 430 ft. thick with only 30 ft. of partings. A conservative estimate puts the potential wealth of these coal mines at 1,200,000,000 tons. In fact, the occurrence of such a big deposit of coal in a relatively small area like the Fushun field has hardly a parallel in the world.

The most ancient rocks in the field are granitic gneiss, on which tuff, regarded as of lower Cambrian period, has been deposited. In the eastern portion of the field red and green tuffs with porphyrite sheets cover the gneiss unconformably, tufaceous sandstone and shale overlying them. These are considered to be Mesozoic.

Coal Occurs on Sunken Land Between Faults

The Tertiary formation in which the coal seams are interbedded was deposited on the "graben"* running from east to west and generally dips north 30 deg. east. By fossils discovered in the shale the formation has been proved to belong to the Miocene. It may be divided into the lower and the main coal-bearing series.

The lower coal-bearing series consists of tufaceous sandstone, conglomerate and shale, in which two coal measures are interbedded. The lower of these lies near the basement gneiss and is rather thin. The upper one is several feet above the lower. It has a maximum thickness of 20 ft., an average thickness of 10 ft. and carries many partings. These beds are worked on only a small scale by Chinese.

The main coal-bearing series consists of shale. That immediately overlying the coal is thick and the portion near the bed is bituminous in nature and brown in color, containing about 57 lb. of tar and producing about 730 cu.ft. of combustible gas per ton. It is expected that this will prove an important source of creosote in the future.

A broad fold with numerous faults is found between Yangpaipu and Laofutai whereby the beds seem to have been shifted about 2,400 ft. Basalt crops out on the southern hills of the field, occurring as sheets, particularly between the lower and the main series or in the lower series. The effects of contact metamorphism are seen in the shale and coal beds of the lower series, but not in the main series.

Lustrous Pitch-Black Bituminous Coal

Fushun coal is bituminous and possesses a fine pitch-black lustre. Coal from the western portions of the field will not coke but the coking quality evidently grows steadily toward the east until the Lumpo district is reached. Here the coal makes a coke suitable for metallurgical purposes.

The following are analyses of Fushun coal made on several samples at different times:*

	Percentage
Specific gravity	1.229 – 1.342
Moisture	2.240 – 7.186
Volatile matter	38.371 – 48.758
Fixed carbon	45.340 – 60.465
Ash	1.440 – 9.340
Nitrogen	1.100 – 2.307
Sulphur	0.338 – 1.738
Calorific value B.t.u.	11,100 – 13,850
Calorific value Calorie	6,160 – 7,700
Color of ash	Commonly a light brownish grey

The ash contains silicic acid, alumina, ferric oxide, sulphuric acid, calcium and a small percentage of phosphoric acid and magnesium.

At these mines the coal was first worked by the pillar-and-stall system with 105-ft. pillars and 8-ft. rooms driven 6 ft. high, levels being 35 to 60 ft. apart. As operations progressed, however, the many difficulties commonly experienced in mining thick beds were encountered. The fallen coal in the entries and galleries,

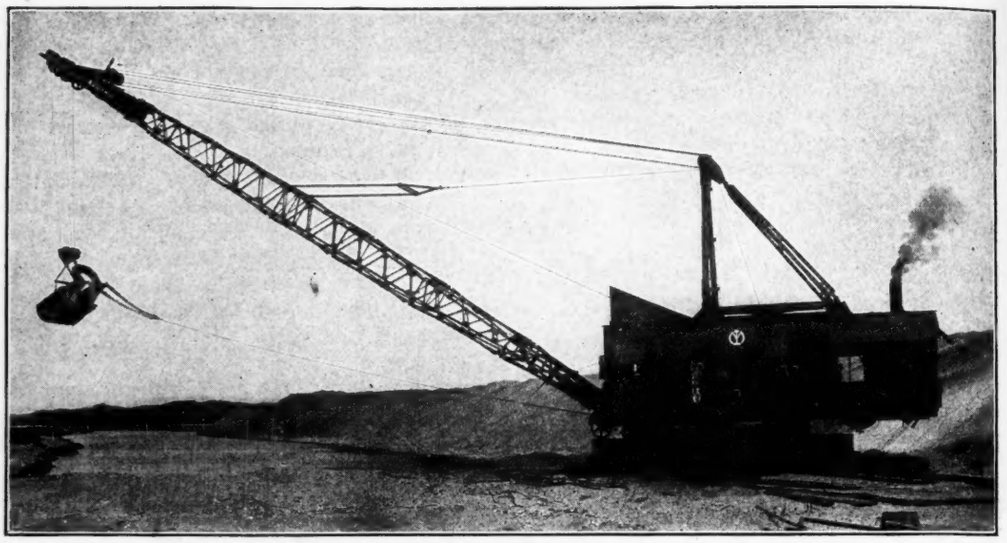
*A tract of land depressed between two faults—that is to say, a valley between two rifts.

Sand Filling

This is a comparatively high room. In many places 6 ft. is the preferred height; at others, where the conditions are favorable, the room is made 20 ft. high. The pipe is placed close to the rib side, so that when the next cut is made it will be possible to recover the sand-submerged pipe. However, this picture is not a typical one. In an ordinary case the end of the place is stopped with boards or mats, and there is no place for spectators.

Dragline Excavator

Another of the large machines used to obtain sand filling. In the winter the sand, having its interstices completely filled with water, freezes into a solid mass. Consequently sand is dug in the summer and stored for winter operation. A 42-mile electric railroad has been built for hauling the sand to the mines.



moreover, was subject to spontaneous combustion. To this was ascribed many fires and the disastrous coal-dust explosion at the Oyama shaft in 1918, when about 900 lives were lost.

Because of the frequent falls of coal it became necessary, in order to prevent slacking, to line the walls of the main haulage road and even those of the shaft bottom, which for the most part were located in the coal. As the length of roads aggregated at one time as much as 200 miles it is easy to realize what a large expenditure the lining of entries might ultimately involve. Moreover, a careful investigation showed that not less than 70 per cent of the total quantity of coal would have to be left underground unless more efficient methods were introduced.

All the Pits Are Now Sand-Flushed

Meanwhile, at Yangpaipu pit the sand-flushing or hydraulic-stowage system had been installed, yielding exceedingly gratifying results. Accordingly it was decided to apply the hydraulic-stowage system to the rest of the pits. By 1920 almost all the equipment necessary for carrying out this plan had been completed.

Before the World War the coal was mined cheaply by Chinese laborers, coming chiefly from the Shantung and Chihli districts of North China. During the war, however, great difficulties were experienced in obtaining a sufficient number of workmen owing to the fact that many of them had gone to France. The increased labor cost also was accompanied by a greater indirect expense, arising out of the necessity of providing accommodations for such as were available.

These circumstances made it profitable to introduce machine mining, and engineers began an investigation to determine the machines best adapted for cutting and conveying the coal under the actual conditions prevailing. Two Mavor and Coulson Pick Quick bar cutters, electrically-driven, and twelve Siskol coal cutters, driven by compressed air, are now under test. In addition two Goodman and two Sullivan shortwall machines have been ordered for trial.

Sand Dug by Excavators and Shovels

To provide material for hydraulic storage, two dragline excavators, one Bucyrus and one Marion, of 6 cu.yd. capacity each, also one Bucyrus shovel of 2½ cu.yd. capacity, are installed on the bank of the River Hun, which is located a half mile north of the field. One Lubecker bucket excavator of a capacity of 260 cu.yd. per hour also is employed for this purpose. This is equipped with a 120-hp. induction motor and operates on the bank of the River Yangpaipu, a branch of the Hun.

Six Bucyrus and two Marion shovels, each equipped with 2½-cu.yd. buckets, also are at work at well-weathered sandstone hills near Yangpaipu pit and Oyama shaft. Forty-two miles of standard-gage electric railway laid with 80-lb. rail have been constructed and seven 50-ton electric locomotives, four German and three American, have been put in service with 320 20-yd. sand cars for transporting stowage materials.

This sand usually is dug in the summer and stored for winter use, as it is found that the rivers freeze hard during the winter and that the gravel is hard to dislodge. The same is, in a degree, true of the material being dug out of the sandstone hills. About 10,000 cu.yd. of sand is flushed into the underground workings every day.

Three Sand-Filling Plants at Each Mine

Speaking generally, at each mine three complete sand-filling units are installed, each consisting of a sand bin, an unloading plough hoist, a hydrant room, two revolving screens, two mixing pans, regulating gates for sand and a shaft with hoist for taking out stones of larger size which refuse to pass through the screen. This equipment at or immediately below the surface is connected with the underground workings by a vertical shaft some 16 or 20 ft. in diameter and from 100 to 300 ft. deep. Below that depth inclined galleries usually are available. In each of these passageways several 6-in. steel pipe lines are laid.

Over the sand bin two tracks usually are laid and the area below them is covered by screens which hold out the larger stone. The sand bin is constructed of concrete and is in the shape of a frustum of a cone with the smaller end downward. The bottom of this frustum is turned into a hydrant room which resembles a gallery. It has a semi-cylindrical roof of about 12 ft. diameter. This roof of this gallery has four openings to the sand bin measuring 24 x 24 in.

Each opening is provided with a nozzle delivering water from centrifugal pumps at 180-lb. pressure, which flushes down the sand into a duct built on the floor of

the gallery. The sand is carried by the water to a revolving screen, the oversize being picked up by a conveyor and delivered to a hoist, by which it is carried to the surface.

The management of the colliery is well aware that this is not exactly the ideal way of handling the coarse material. It would be better, if possible, to reject the larger stone at the Hun or the Yangpaipu, but the fact that the excavator or shovel is moving makes it difficult to provide screening facilities. The Lubeker Maschinenbau Gesellschaft, of Lubeck, Germany, manufactures a kiesbagger (gravel digger) that screens sand as it loads it. It is the intention to purchase one of these, and, if it prove suitable, to install more, and to depend on these rather than on the screen below the tracks and the revolving screen above the mixing pans for the elimination of coarse material.

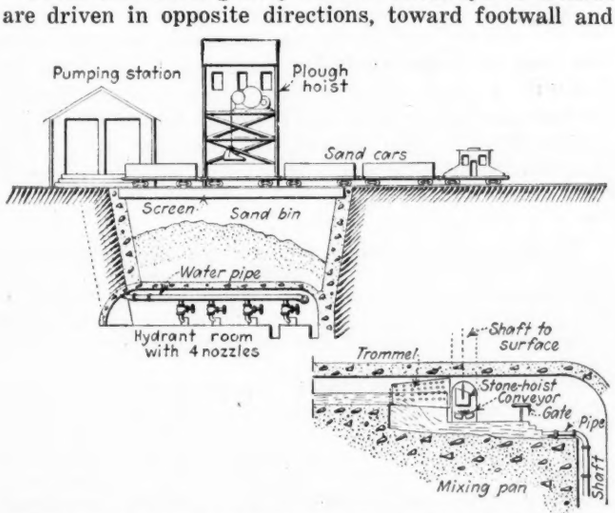
Most of the sand, of course, is fine and goes to the mixing pan, where more water is added, if it be necessary for the easy descent of the sand through the pipes to the working face. Controlling gates are placed in the mixing pan near each pipe entrance. The quantity of water needed for carrying the sand is one to one by volume or about one to three and sometimes one to five by weight, according to the density of the sand.

The coal under heavy cover naturally gives more trouble than that which is shallower. In parts where the coal is 1,000 to 2,000 ft. below the surface the roof and walls tend to buckle and fall, and no standard method of working can be outlined, as the system varies from place to place in the mine. The coal is mined by slicing, however.

Sand-Filled Room Rib of Next Room Driven

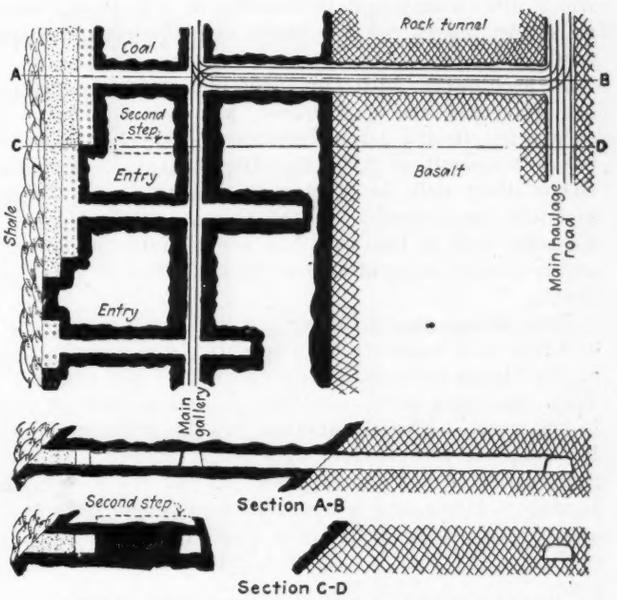
In the Oyama shaft a main level haulage road 1,234 ft. below the surface is driven in the basalt. Here an endless rope haulage is installed, but the rope soon will be replaced by 5-ton trolley locomotives. Crosscuts each provided with two roads pass through the basalt and enter the center line of the bed where it joins a level main gallery which is driven like the main haulage road on the strike but measuring only 6 x 6 ft.

From this main gallery several roadways or entries are driven in opposite directions, toward footwall and



PREPARING SAND AND DELIVERING IT TO PIPE SYSTEM

The mixing pan in the lower right-hand corner lies at right angles to the hydrant room shown in the upper left-hand corner. The sand cannot be conveniently sized at the river where it is excavated, so it is passed through a screen at the dump and through a trommel, or revolving screen, near the mixing pan, the material failing to pass through the trommel falling on a conveyor belt and being carried to a bucket, by which it is hoisted to the surface.



METHOD OF MINING AND HYDRAULIC FILLING

The main haulage road is in the basalt footwall, rock headings being driven to a main gallery in the coal. At intervals entries are driven both to footwall and hanging wall. Rooms are driven at the ends of the entries. As soon as completed they are filled with sand, other rooms are started without a pillar between them and the sand-filled room, and so on till the coal in that lift has been replaced by sand, when other entries (labelled in the cut "second step") are driven into the seam over the top of the lift. The recovery is almost complete, all the pipe and much of the timber being saved.

headwall, at points between 100 and 200 ft. apart. They are driven until they meet the basalt in the footwall or the shale in the headwall. When these have been reached the place is widened out right and left, forming what is known as a room. It is usually 6 ft. high, 8 to 12 ft. wide and 50 to 100 ft. long.

Where conditions are favorable, the room may be driven as high as 20 ft., 12 to 16 ft. wide and 100 ft. long. As the mining continues the room is temporarily supported by timbering, and when the work is finished the pipe line for introducing the sand into the room is laid close up to the coal rib remote from the footwall or headwall, as the case may be. This wall will be next in turn to be mined, and the pipe, being close up to it, can be salvaged when this room is completed.

To return to the first room, the opening is closed up with wood boards and sometimes by mats made by weaving the stalks of Kaolian corn, which can be obtained at little cost in the Fushun district. When a room is ready for sand packing a signal is sent to the outside pumping station and sand is flushed down the hundreds of feet of pipe from the surface, filling the room compactly in a few hours. After the room is drained, the next room is started in the adjoining rib, extended, timbered and flushed like the first. Later, half way between adjacent entries a second entry at a level just above that of the first series is driven, and the process of room driving commenced, the new rooms resting on the sand filling of the rooms below. Some of the material used in the timbering of the lower room can be recovered when working the rooms above.

The method of sinking shafts and driving main haulages in the basalt has not been generally adopted, but it is the intention to develop it as soon as possible. Shaft landings will be provided at 200 to 400 ft. intervals, these being connected with the working places by rock crosscuts. This may be expensive construction, but it renders possible the recovery of large quantities of coal

which otherwise would necessarily be left underground as safety pillars for the shaft and the main haulage roads.

In accordance with this new plan two new shafts, one downcast and one upcast, are now in course of excavation in the Lumpo district. They are expected to reach a depth of 2,000 ft. The excavation of similar shafts then will be started in Laofutai and Oyama districts successively. In the Oyama shafts the main haulage road in the rock has been completed already, and a similar excavation has been started at the Togo shafts.

Two 320-hp. electrically-driven Sulzer air compressors of 1,500 cu.ft. capacity have recently been installed, one at the Lumpo pit for sinking new shafts and one at the Togo operation for excavating the main haulage road in the rock. These machines are in addition to six Ingersoll air compressors of smaller capacity. Several Sullivan rock drills have been ordered for use in the Lumpo working and a dozen Atlas Cyclops rock drills are now in operation on the Togo roadways together with a similar number of rock drills of the Flottmann type.

After the completion of these shafts and working by the hydraulic-stowage system, it will not be difficult to remove 70 to 80 per cent of the total quantity of coal in the Fushun mine. In the shallower part of the beds stripping, similar to that conducted in various parts of America, will be followed upon a large scale.

Steel Gauzes Versus Brass or Copper

IN DISCUSSING the "Relative Safety of Brass, Copper and Steel Gauzes in Miners' Flame Safety Lamps," L. C. Ilsley and A. B. Hooker, in a bulletin of that name published by the U. S. Bureau of Mines, say:

"At normal atmospheric temperature, steel oxidizes considerably. Gauze manufacturers recognize this fact and provide for it by giving the gauze an anti-rust coating to protect it until it is put in service. After this coating is removed, oxidation undoubtedly occurs under all kinds of atmospheric conditions, but probably much more readily when the lamp is out of service than when burning. If the unused lamps are allowed to stay in damp rooms for a long time the gauze is seriously oxidized.

"During the test of such lamps under conditions below red heat no serious oxidation seemed to take place, and none of the test conditions affected the gauzes, for in none were they subjected to a temperature anywhere near the melting point of steel. Under the severest conditions imposed upon them during our investigation, they retained their rigidity, and though they showed some flaking of metal, mechanically their safety was in no sense impaired.

"Steel-gauze fabrics undoubtedly undergo a process of slow, continuous oxidation that limits their safe life. The extent of the present investigation was not such as to show any serious deterioration. All failures obtained were due to subjecting the gauze in unbonneted lamps to moving air mixtures. Such failures were caused by the 'passage' of flame through the openings in the gauze without rupture of the material and showed a lack of cooling action under the prevailing conditions rather than any mechanical breakdown of the gauze material.

"Brass gauzes, if made of a quality of brass such as was used in the present investigation, do not oxidize to any appreciable extent at normal atmospheric temperatures. At temperatures up to bright red heat, a smooth grayish-black oxide is formed that adheres tenaciously to the wires. Gauzes thus oxidized showed a slight increase in weight, and probably under this condition were slightly safer than when new.

"At bright red heat a fuzzy deposit of white zinc oxide is formed. As the temperature at which this occurs is very near the fusing point of the metal, it is difficult to determine just how far oxidation affects safety. In some of the tests, where failure occurred by rupture, a small hole appeared in the gauze. Many of the wires fringing the hole became oxidized and wasted away until only a barely visible thread of wire remained. At other points actual fusion of the material was evident, and still farther from the hole were areas covered with zinc oxide. If the temperature of the gauze reached the melting point of brass, the gauze fused and failure occurred before much oxidation took place.

"Copper gauzes do not oxidize to any degree at normal atmospheric temperatures, but they oxidize freely at a temperature below a bright red heat. At a dark red heat large flakes of copper oxide form which scale off easily, leaving the wire smaller in diameter and in an annealed state. At a point near this temperature the gauzes, if handled, lose their rigidity, becoming limp and shapeless. At a bright heat the oxidation is further increased and the wires become brittle and break out when the gauze is jarred.

"The tests made to determine relative oxidation showed copper to be inferior either to steel or brass. Under applied heat copper seriously oxidizes over a wide range of temperature. The material after such heating is mechanically unsafe and its rigidity is unsatisfactory. In our experiments copper gauzes failed by both passage and rupture."

The bulletin goes on to say "Monel metal and nickel have been proposed for use as flame-lamp gauzes. As these materials have a higher melting point than steel, have about the same heat conductivity, and resist oxidation at atmospheric and at high temperatures, they should be investigated."

Another conclusion the authors arrive at is that the safest type of lamp is the double-gauze bonneted lamp, the next in descending order is one that is bonneted but has only a single gauze. Next below it is the double-gauze unbonneted lamp, and the least safe is the single-gauze lamp without bonnet, the common Davy. The Hailwood combustion-tube lamp is as safe as that with two gauzes and a bonnet.

FRENCH MEASURES which Premier Briand will communicate to Lloyd George at the Lympne conference, it is said, will include a new tax of from fifty to seventy francs per ton on coal mined in the Ruhr district, which will be placed under the supervision of French mining engineers.

BRITISH COLLIERY OWNERS are declining to discuss prices while the miners' strike is in progress, but express a desire to quote delivery terms after work is resumed. Production in the week ended April 2, at which time mining came to a standstill, was placed at 1,950,000 tons, compared with 3,660,000 in the week preceding and 5,240,000 tons during the week of March 19.

C. J. NEEKAMP HAS BEEN ELECTED secretary of the Northeastern Kentucky Coal Operators Association. Mr. Neekamp has been assistant secretary of the Logan Coal Operators Association.

How an Induction Motor "Motes" and Why

Revolve a Horseshoe Magnet Over a Compass and the Compass Needle Will Rotate Also—In Like Manner the Armature of an Induction Motor Revolves Within the Rotating Magnetic Field Produced in the Machine

BY H. H. STARTZMAN*
East Pittsburgh, Pa.

FOUR general types of alternating-current motors are now manufactured—the synchronous, the induction, the repulsion and the series. Of these the induction type is by far the most extensively used for power purposes.

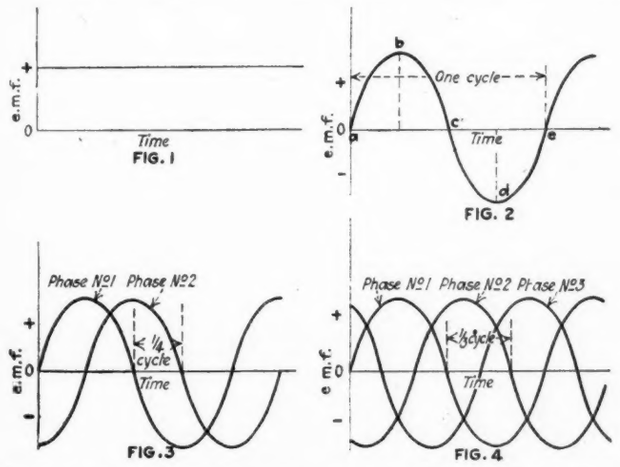
The operation of the induction type of alternating-current motor is strikingly different from that of a direct-current machine because there is no electrical connection between the armature (usually called "rotor" or "secondary" in a motor of this type) and the source of current supply. The motion of the armature or rotor of an induction motor is dependent upon a rotating magnetic field. It is this peculiar field which is characteristic of the induction motor.

If a permanent magnet, like those made up for toys in the form of a horseshoe, is brought near a compass the needle will move until its north pole is closest the south pole of the permanent magnet. Rotate the magnet about the compass and the needle will follow. In an induction motor the alternating current is made to produce a rotating magnetic field similar to that produced by the moving permanent magnet. The rotor of the machine, like the compass needle, then follows this field.

MAGNETIC POLES MOVE IN THE FIXED STATOR

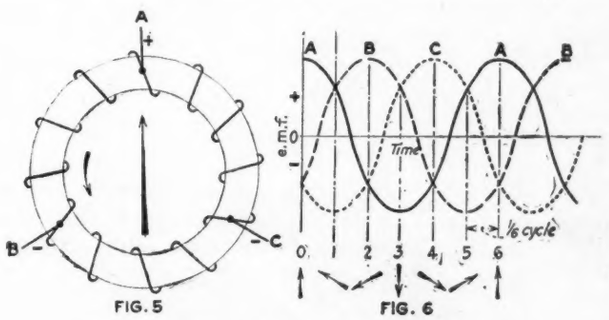
The magnetic part of the machine in the induction motor does not move, and is therefore called the stator, because it stands still. Though the stator is stationary the magnetic polarization moves, and the rotation of the rotor results from its tendency to follow the movement of the poles.

With direct current the electromotive force is constant, but with alternating current the electromotive force, or difference of potential, changes every instant. The straight horizontal line of Fig. 1 shows how the value of a direct-current electromotive force remains constant regardless of the time as plotted along the base of the co-ordinates. Fig. 2, on the other hand, shows how an alternating-current electromotive force (e.m.f.) varies from instant to instant. At *a* in Fig. 2 the e.m.f. is zero, at *b* it has reached a maximum in a positive direction, at *c* it is again zero, at *d* it has reached a maximum in a negative direction and at *e* it has again become zero, is tending in the same direction and has the same value that it had at *a*. Having gone through a complete set of values, arrived again at the same value and having the same tendency as at the start, the e.m.f. is said to have gone through a "cycle." The number of cycles through which it passes in one second is called the "frequency."



FIGS. 1 TO 4. COMPARE DIRECT CURRENT WITH ALTERNATING AND SINGLE-PHASE WITH THREE-PHASE

Fig. 1 shows the relation of electromotive force to time with a direct current—a straight line because of the uniformity of voltage and current. Fig. 2 shows the variation in electromotive force of a single phase of alternating current and the length of a cycle. Fig. 3 shows a two-phase current, the two currents being one-fourth cycle apart. Fig. 4 shows a three-phase current, the currents being one-third of a cycle apart.



FIGS. 5 AND 6. ROTOR WITH THREE TAPS

A, B and C are connected to a source of three-phase current, the graphs of which are shown in Fig. 6. The small arrows below the graph show successive positions of needle.

For economic reasons "polyphase" circuits or those of more than one phase are used for power purposes. Fig. 2 shows the graph of the e.m.f. in a single-phase circuit. Fig. 3 shows the graphs of the e.m.f.'s in a two-phase circuit—the two being separated by or possessing a "phase difference" of one-quarter of a cycle. Fig. 4 shows the graphs of the e.m.f.'s in a three-phase circuit. The three e.m.f.'s here have a phase difference of one-third of a cycle.

Fig. 5 is a sketch of an iron ring wound with wire from which taps are taken at three equidistant points—*A*, *B* and *C*. These are connected to a source of three-phase current, the graphs of the e.m.f.'s of which are shown in Fig. 6. Consider now the instant when the time is zero as at position *o*. The e.m.f. of phase *A* is now maximum in a positive direction, *B* and *C* both being one-half maximum in a negative direction.

*Engineering department, Westinghouse Electric & Mfg. Co.

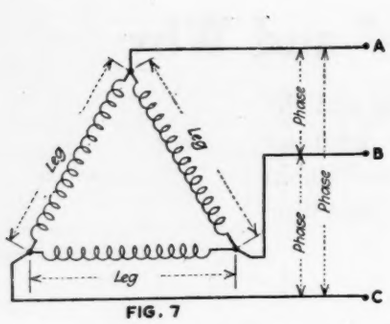


FIG. 7

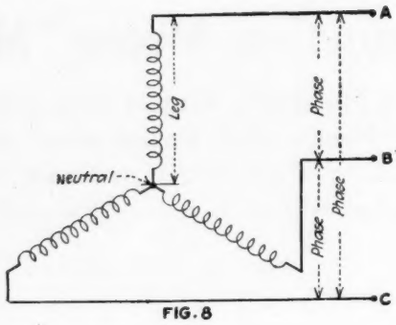


FIG. 8

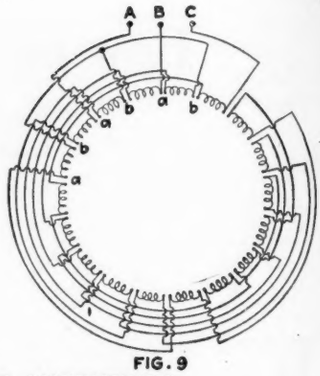


FIG. 9

FIGS. 7, 8 AND 9. ILLUSTRATING THE DELTA, OR MESH, AND STAR, OR Y, CONNECTIONS
The method of joining the wires known as a delta connection is that shown in Fig. 5 and illustrated diagrammatically in Fig. 7. Each section of the winding, commonly known as a "leg," is connected to the ends of the two other legs and each point of junction is connected to one of the three phases of the circuit. Figs. 8 and 9 refer to the star connection, one end of each of the three "legs" being connected to a common point called the neutral.

If a compass needle were to be placed in the center of the wire-wound ring of Fig. 5 the needle would point toward tap *A* as indicated. One-sixth of a cycle later—a cycle being a period of time, be it remembered, and not an interval of space—the conditions become those shown on the line marked *1* in the graph. *C* is then at its maximum in a negative direction, and *A* and *B* are each one-half of maximum in a positive direction.

With these conditions the compass needle would move so as to point half way between taps *A* and *B* in Fig. 5 and as shown by the arrow under line *1* in Fig. 6. One-sixth of a cycle later the conditions become those shown on the line marked *2* in the graph, wherein *B* is at maximum positive direction and *A* and *C* each one-half maximum in a negative direction. The compass needle now would point toward tap *B*, or as shown by the arrow under line *2* in Fig. 6.

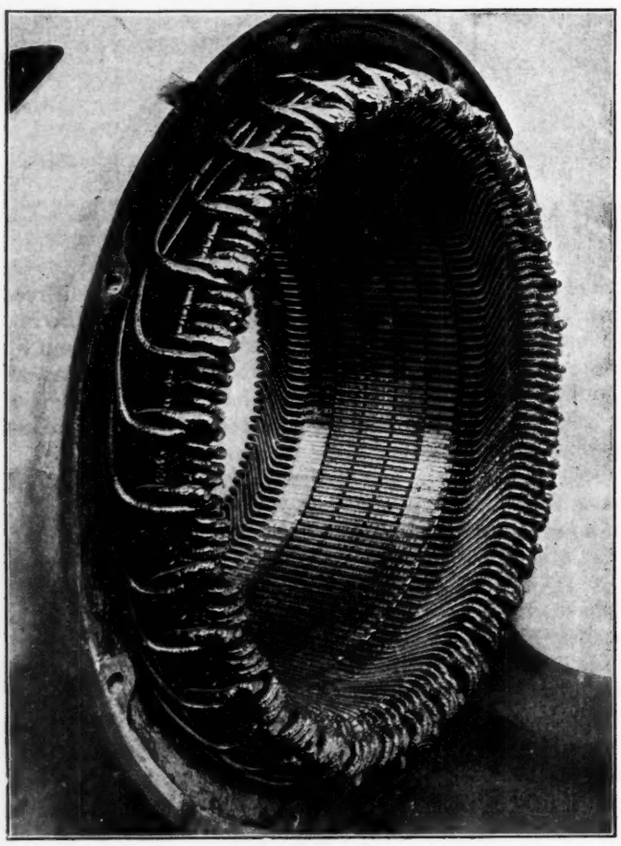


FIG. 10. STATOR WINDINGS OF LARGE INDUCTION MOTOR
It will be noted that each phase has five coils per pole. These groups of five coils with the cross connections coming out from between groups can be readily distinguished.

One-sixth of a cycle later, or one-half of a cycle from the original position *0*, the conditions become those shown on the line *3* in the graph, *A* being maximum in a negative direction and *B* and *C* each one-half maximum in a positive direction. The compass needle then would point in a position half way between taps *B* and *C*, or just one-half of a revolution from its original position, the direction being shown by the arrow under line *3*. Simultaneously the e.m.f.'s have gone through one-half of a cycle.

Pole and Needle Return After Full Cycle

In a similar manner for every one-sixth of a cycle (see lines *4*, *5* and *6*) the compass needle would rotate one-sixth of a revolution until at last when line *6* in the passage of time is reached the e.m.f.'s have gone through one complete cycle and the compass needle again stands in its original position. It has thus made one complete revolution while the e.m.f.'s have experienced a complete cycle of changes of polarity. If any two of the three connections, *A*, *B* and *C*, were transposed the direction of rotation of the magnetic field would be reversed and the needle caused to rotate in the opposite direction.

Diagrammatically the winding on the iron ring of Fig. 5 is connected as shown in Fig. 7—that is, each section of the winding, usually called a "leg," is connected to the ends of the two other legs, each point of junction being connected to one of the three phases of the circuit. This method of connecting a three-phase winding where all three legs are joined in series and then to the line in such a way that each leg is across a "phase" of a three-phase circuit is called a "delta" or "mesh" connection and is represented by the symbol Δ.

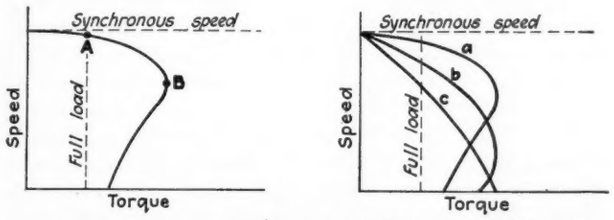
In Delta Leg Voltage Equals Phase Voltage

A second and more usual method of connecting three-phase motor windings is shown in Fig. 8. This is called the "star" or *Y* connection and is represented by the symbol *Y*. One end of each of the three legs is connected to a common point called the "neutral," the three free ends being connected to the three line wires. In the delta connection the leg voltage is equal to the phase voltage but the leg current is equal to the phase current divided by the square root of three. In the star connection the leg current is equal to the line current but the leg voltage is equal to the line voltage divided by the square root of three. In two-phase four-

wire windings there are two legs, each shunted across a pair of line wires between which a phase exists. The voltage and current in each leg are the same as those in the phase to which it is connected. Two-phase three-wire windings are similarly connected, one line wire being common to both phases. The current that flows in the common wire is the resultant of the currents of the two phases.

The field (usually called "primary" or "stator") windings in an induction motor consist of coils imbedded in evenly distributed slots on the inside surface of a laminated steel cylindrical shell. The total number of coils are divided into groups which form the poles. The pole groups are subdivided into elements which represent the groups of coils per phase per pole. The coils within a group or the groups within a leg may be connected in series or in parallel. The legs can be connected in star or delta if it is a three-phase winding. By changing the series and parallel connections of the coils in a group or the groups in a leg a motor often can be reconnected to operate on another voltage.

A schematic diagram of the connections of a six-pole three-phase star-connected stator is shown in Fig. 9. The elements *a* and *b* on the diagram represent the coil groups per phase per pole. Fig. 10 is a photograph of the



FIGS. 11 AND 12. GRAPHS SHOWING RELATION OF SPEED TO TORQUE

In Fig. 11 note the fact that at *A* there is a satisfactory torque, or turning effort, combined with suitable speed. After *B* is reached the speed decreases rapidly and the torque, which has been increasing, is on the point of declining. This is the "pulling-out point." Fig. 12 shows speed-torque characteristics of a wound-rotor motor under three different resistance conditions.

stator windings of a large induction motor. Five coils per phase per pole are shown. These groups of five coils with the cross connections coming out from between groups can be distinguished easily.

Rotor Does Not Keep Up With Pole Motion

The rotating compass as described illustrates the operation of a polyphase "synchronous" motor, as the rotor revolves in "synchronism," or exactly in step, with the rotating magnetic field. If the compass needle is replaced by a laminated steel cylinder wound with conductors in a manner similar to that employed in an ordinary direct-current armature except that these conductors are short-circuited, it is found that this also will revolve, but at a speed slightly less than that of the rotating field. This arrangement then forms the induction motor.

As the rotor travels at less than synchronous speed it really moves backward with respect to the revolving field. Thus the short-circuited conductors, or "cage windings," on the surface of the rotor have an e.m.f. induced within them which causes a circulating current to flow. It is the force arising from the interaction of this circulating current with the synchronously revolving field that causes the rotor to turn. The difference in speed between the rotor and the revolving field is called the "slip" and usually is expressed in per cent of

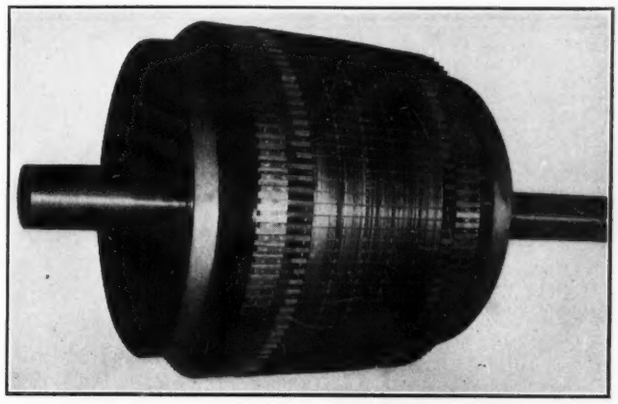


FIG. 13. ROTOR OF CAGE-WOUND INDUCTION MOTOR

The cage winding consists of a number of bars driven through partly inclosed slots, the extremities of the bars being brazed or cast to end rings.

"synchronous speed." The synchronous speed of the rotating field in revolutions per minute is equal to sixty times the frequency divided by the number of pairs of poles.

"Pull-Out Torque" Must Exceed Need

As the load comes on an induction motor the slip increases, causing a larger circulating current and a greater torque. This, however, does not go on indefinitely because of the resistance, reactance and magnetic leakage of the windings. Consequently at some point represented by *B* on the speed-torque curve in Fig. 11 any further decrease in speed causes a falling off in the torque. The point *B* is called the "pulling-out point" and represents the maximum torque that can be obtained from the motor. Point *A* represents the full load, showing approximately the relative values of full-load and pull-out torques of a standard cage-wound induction motor. In the application of these machines it is necessary to know the pull-out torque of the motor, which always must be greater than the maximum-load torque expected.

How Speed-Torque Curves Can Be Modified

By changing the values of the resistance, reactance or magnetic leakage the induction motor can be made to have different shaped speed-torque curves to meet the requirements for different applications. Because of manufacturing methods and similar causes the secondary resistance is the factor most easily changed. Fig. 13 shows a rotor of a cage-wound induction motor. The cage winding consists of a number of bars driven

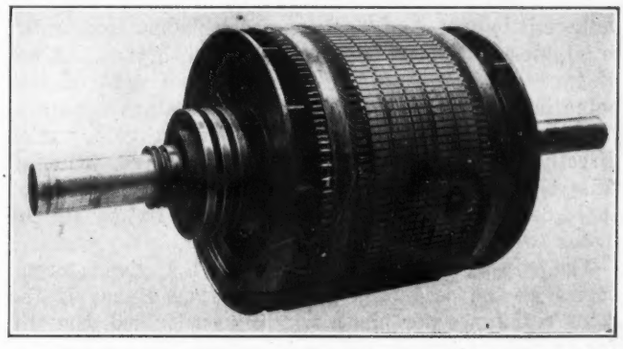


FIG. 14. WOUND ROTOR FOR INDUCTION MOTOR

This is wound in the same way as the stator, Fig. 10. The terminals are connected by means of slip rings and brushes to an external resistance, by which the rotor circuit losses can be altered and the speed controlled.

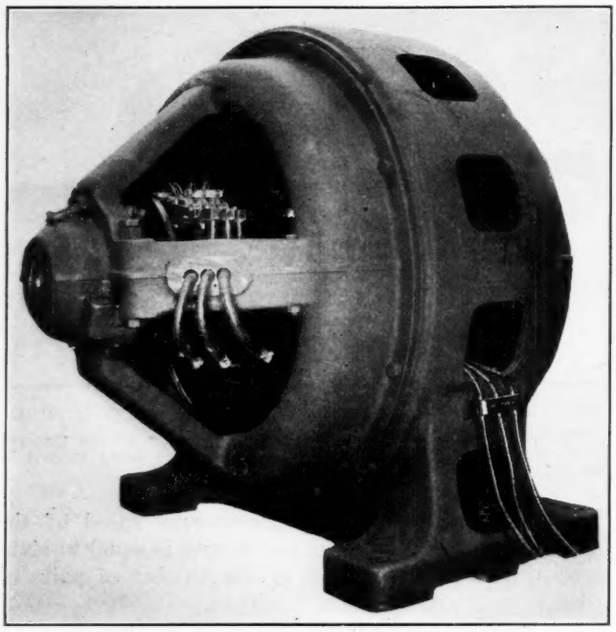


FIG. 15. LARGE WOUND-ROTOR MOTOR
This motor is intended for use under variable speed conditions.

through partly-enclosed slots, the extremities of the bars being brazed or cast to end rings.

By using different metals or alloys in the end rings or in the bars the motor may be so designed as to have different secondary resistances. A motor with a low secondary resistance will deliver maximum torque at a small slip and will have low resistance losses in the secondary. If the motor has a high secondary resistance it will deliver maximum torque at a high slip and have high secondary resistance losses. The induction motor with secondary of low resistance corresponds in general characteristics to a direct-current shunt motor and a high-resistance secondary induction motor corresponds to a direct-current compound motor.

If, on starting, full line voltage were thrown on a cage-wound induction motor, from five to nine times normal current would flow through the windings. The large rush of current possibly would injure the insulation and in addition cause excessive voltage fluctuations on the supply circuit. To limit the starting current to a reasonable value, cage-wound motors are, with the exception of the smaller sizes started on reduced line voltage.

Compensators Reduce Line Voltage at Start

The most convenient method of reducing the line voltage is by means of "compensators," which are "auto" or single-coil transformers provided with taps. A set of taps giving about 50, 60 and 80 per cent of line potential are used ordinarily on compensators for starting service. As the torque of an induction motor varies directly as the square of the applied voltage, reducing this voltage is not a particularly satisfactory method of speed control. Starting on reduced potential causes the motor to develop a low torque.

The slip of an induction motor at a given torque varies as the secondary copper losses. Hence if the rotor resistance per phase winding is doubled, the slip for any given torque will be increased 100 per cent; if the resistance is increased to three times its initial value, the slip will be increased 200 per cent, and so on. As the secondary resistance can be made to set the speed for any given torque, motors are built with "wound" rotors. A wound rotor is shown in Fig. 14. This winding is similar to the one on the stator, the terminals being connected by means of slip rings and brushes to an external resistance. By varying this external resistance the rotor circuit losses can be altered and the speed controlled. By placing sufficient external resistance in the rotor circuit, maximum torque can be made to fall at about 100 per cent slip or at start.

External Resistance Used at Starting

External resistance is used not only to control the speed of a wound-rotor motor but to start it as well. Fig. 12 shows the speed-torque characteristics of a wound-rotor motor with a two-step external resistance. Curve *c* is the torque curve with all the external resistance in the circuit and represents starting conditions. Curve *b* is the torque characteristics when one section of the external resistance is cut out, and curve *a* is the torque curve when no external resistance whatever is in the circuit. Fig. 15 shows a large wound-rotor motor built for variable-speed applications.

The speed of an induction motor can be controlled also by varying the frequency of the supply voltage, the number of motor poles or by cascade connection. To increase the speed range, combinations of these methods are adopted.

Cage-wound motors are used where it is desirable to obtain speed that is practically constant, and rugged construction, provided that a relatively low starting torque is not objectionable. The quality of the finished product of textile machinery depends on the uniformity of speed of the driving motors. This makes cage-wound induction motors preferable to direct-current machines.

Line shafting, pumps, fans and constant speed wood- and metal-working machinery, cement mills where the dust would cause slip rings to wear rapidly, are all examples of applications to which cage-wound induction motors are well adapted. Special high-resistance cage-wound rotor motors are used for light shears and punch presses, small cranes and the like.

For variable-speed service, such as hoists, large cranes and heavy starting-duty applications, the only alternating-current motor available at the present time is the wound-rotor induction machine.

German Figures on Mine Locomotives

INTERESTING statistics on the use of mine locomotives in Germany are given by the Boiler Insurance Co., of Dortmund, which made inquiries into coal transport in mines. The cost per metric ton-kilometer in marks should be multiplied by 34.747 or 2.204 to obtain the cost per short ton-mile in cents, according as the value of the mark is figured at 23.8c., the pre-war rate, or 1.151c., the present value.

Type of Locomotive	No. in Service	Coal Hauled, Metric Tons	Ton-Km. per Locomotive	Cost per Ton-Km. 1919, Marks	Cost per Short Ton-Mile in Cents	
Trolley	881	26,748,979	87,840	0.452	15.71	1.00
Compressed air	624	14,983,629	44,482	0.794	27.59	1.76
Gasoline	715	13,826,248	31,954	0.843	29.30	1.86
Storage-battery	25	1,326,006	68,058	0.966	33.57	2.12

GERMAN COAL EXPORTS to Italy are assuming very large proportions, a fact which is noticed with satisfaction by the Swiss railroad authorities. During the last few years the Swiss Federal Railways have been operated at a considerable loss. From 220 to 230 cars loaded with coal and coke, chiefly from the Ruhr district, pass over the Swiss railway lines each day. This is carried over the Lötschberg-Simplon Electric Railway line, on the mountainous sections of which the trains are divided and new heavy electric locomotives are used to haul the trains over the Alps.

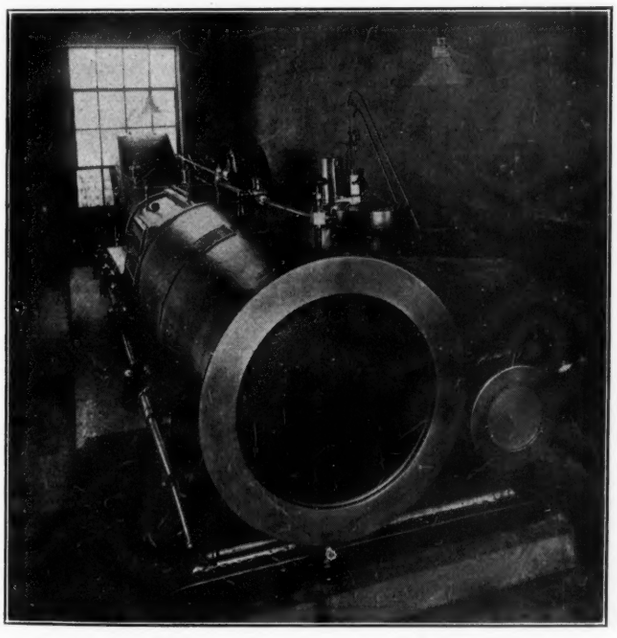
Mine Fan Is Driven by a Uniflow Engine

AN INTERESTING fan installation is that at the No. 4 colliery of the Kingston Coal Co., of Kingston, Pa. The fan is a Vulcan 20 x 8-ft. machine direct connected to a 25 x 30-in. right-hand uniflow engine. The fan under test produces 196,000 cu.ft. of air per minute against a water gage of 3 in. The steam pressure at the throttle is 109 lb. gage and 27 lb. of steam is consumed per horsepower hour. This was determined by a flow meter, the total indicated horsepower being 126.6.

The fan and engine are housed in a reinforced-concrete building. This structure is lighted by heavy wire-insert glass, the window frames being of steel, as are likewise the doors. As is customary at many anthracite collieries two independently-operated fans have been installed, the spare to be used in case of emergency. The second fan in this case is driven by a corliss instead of a uniflow engine.

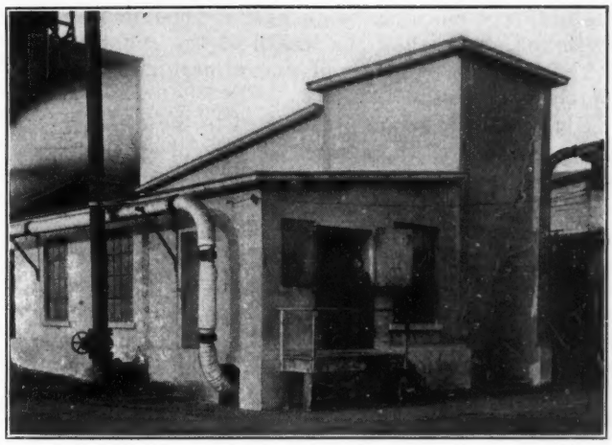
A particularly interesting feature of this uniflow engine is the trouble that the Vulcan Iron Works had with its construction. This firm procured from Germany just previous to the war an engineer who came to this country to design this type of engine. Just as he had completed the plans for the engine proper and before he had designed the governor the war broke out. This engineer, being a reservist, therefore returned to Germany immediately. Consequently, a "uniflow" governor was never designed. The manufacturers accordingly attempted to equip the engine with a standard type of governor, but this did not give satisfaction. After a number of trials the mechanical engineers planned and built a governor that gives satisfactory results.

After the armistice the engineer who designed the original intimated that he would like to return and take up his work where he had dropped it. His overtures, however, fell upon deaf ears.



UNIFLOW ENGINE BY WHICH FAN IS DRIVEN

This engine operates non-condensing but consumes only 27 lb. of steam per horsepower hour. The uniflow engine carries still further the old but still important principle that distinguished Watt's from Newcomen's engine, namely: Cool the cylinder of the engine as little as possible during evacuation.



CONCRETE FAN HOUSE AT KINGSTON NO. 4 COLLIERY

Fan delivers 196,000 cu.ft. of air per minute against a 3-in. water gage. A second fan driven by a corliss engine is provided for use in an emergency.

Something perhaps should be added at this point as to the principle on which the uniflow engine operates. The steam travels in the cylinder in one direction only —hence the name, which is an abbreviation for "unidirectional flow."

Uniflow Engine Reduces Heat Loss in Exhaust

Heat carried into an engine cylinder with the steam may be utilized or dissipated in any one or more of three ways—in radiation, in work and in the exhaust. In a well-jacketed cylinder, losses occasioned by radiation to the air are small indeed; the heat converted into work can be readily accounted for and the balance of the steam consumed must necessarily go into the exhaust. In the ordinary engine, heat is given up to the inner cylinder surfaces during admission and part of the expansion stroke, while during the balance of the expansion stroke and all of the exhaust the transfer of heat is in the opposite direction—that is, from the cylinder walls to the steam which is eventually pushed out at the exhaust port. Any means then that will tend to decrease or nullify this transfer of heat from the steam to the cylinder walls and back again to the steam, especially during the exhaust, will also tend to lessen the heat consumption of the machine.

In the ordinary steam engine the steam enters and leaves the cylinders from the ends, thus the working fluid after heating up the cylinder walls and then cooling off during expansion again picks up the heat which it has imparted to the cylinder and piston and carries it out by the exhaust port. In so doing it not only cools off the cylinder head and walls but sweeps away the water there condensed, which otherwise would be re-evaporated during compression.

Exhaust Made in Center of Cylinder

In the uniflow or una-flow engine the path of the steam lies from the end of the cylinder to the center, exhaust being made at this point. The convex surfaces of the cylinder walls are lagged with heat-insulating material and the cylinder heads are either similarly covered or are steam-jacketed. This type of engine has no exhaust valve. The ports left in the center for this purpose are arranged circumferentially around the cylinder. These take the form of slots equal in length to about one-tenth the full cylinder length. The piston in such an engine is much longer than that employed in

the ordinary machine, being nearly equal in length to the crank, or one-half the length of the cylinder.

The cycle of operations of such a machine is approximately as follows:

High-pressure steam is admitted to the cylinder during a fraction of the stroke. After cut-off this steam operates expansively until, roughly, nine-tenths of the stroke has been completed. At this point the piston begins to uncover the exhaust ports and release takes place. On the return stroke after the exhaust ports have been covered compression begins and if the engine is properly designed the steam filling the clearance space when the end of the stroke has been reached is at the same temperature as that admitted from the boiler.

As the exhaust takes place at the middle of the cylinder, steam having been admitted at the end, this direction of flow is constant and the admission ports, passages and valves are not cooled down to the temperature of the exhaust. This results in a decided saving in heat and consequently in the cost of fuel.

One characteristic of the uniflow engine is that it is nearly as economical at light loads as it is when the loads are normal or excessive. The reason for this lies in the fact that a smaller proportion of the heat in the steam is carried out with the exhaust than is the case with the ordinary type of engine. Ordinarily the most economical results are attained when the cut-off takes place at approximately one-fourth stroke. With the uniflow cutoff may be made anywhere and approximately the same amount of steam be consumed per horsepower as would be the case if the cutoff were made at one-fourth stroke.

Loading a Culm Bank by Means of Breasts

Where Culm Bank Was Located Too Far from Breaker for Dragline Conveyors and Hydraulicking Was Disadvantageous by Driving Breasts Into the Pile and Sliding the Material Down Sheet-Iron Plates 20 Tons Per Man-Day Could be Loaded

By Dever C. Ashmead
Wilkes-Barre, Pa.

IT MAY seem a misleading statement to say that a culm bank may be loaded out by means of breasts, but when one sees the work actually being prosecuted this title seems fitting and appropriate. Of course, when the openings into the culm bank have been widened and connected much of their resemblance to underground rooms will be lost. During their earlier stages, however, this similitude is striking.

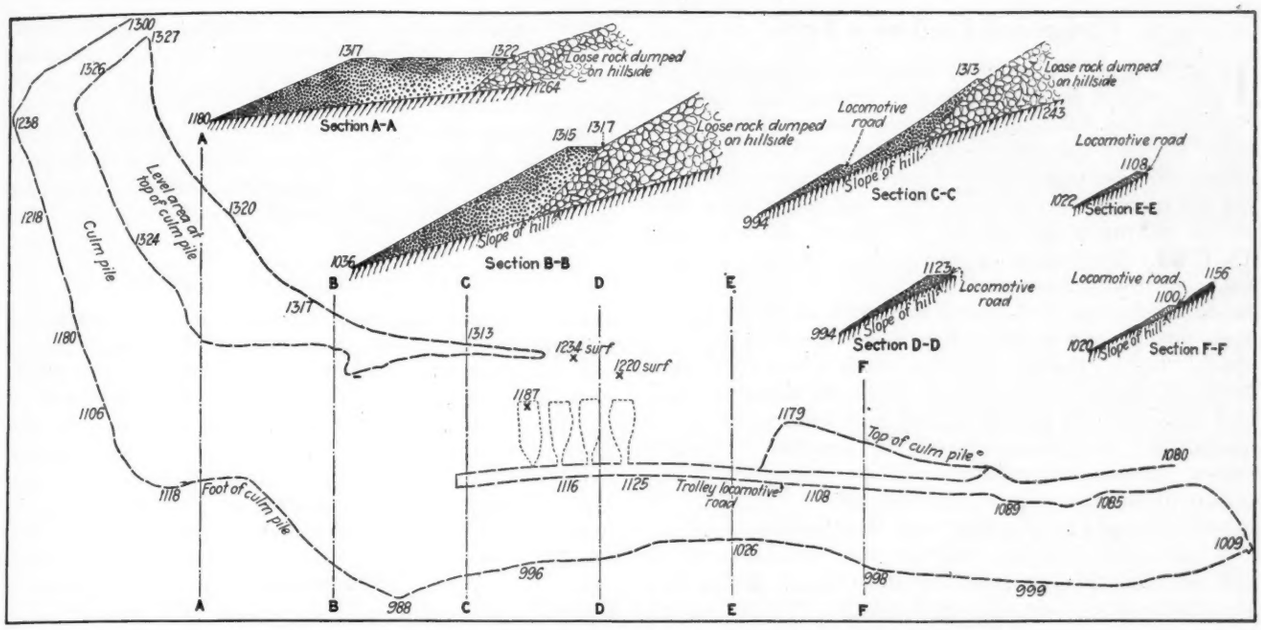
At the Susquehanna Collieries Co.'s Cameron colliery, near Shamokin, Pa., the culm bank now being reclaimed lies on the side of the mountain fully half a mile from the breaker. This is rather too great a distance to permit of the transference of material by means of dragline scrapers. The bank also lies in such a position that a steam shovel, if it could be used at all, could be operated only with difficulty. Furthermore, hydraulicking the materials into cars was open to the objection that it would be apt to wash the material onto the tracks of the Pennsylvania R.R. at the foot of the dump.

With a dragline conveyor no advantage could be taken of the natural slope of the ground, and it seemed advisable to utilize as far as possible the slope of the mountain side.

This slope was, of course, insufficient to permit the coal to slide unaided. Upon sheet iron, however, the material would normally travel with ease. Accordingly,

Mine Breasts on Surface

Conditions being similar to those underground the Susquehanna Collieries Co. has opened breasts in the culm piles at the Cameron colliery. Note the chutes and the gates that fill so large a place in underground workings. Steel plates are used for linings to the chutes.



PLAN AND ELEVATION OF THE CULM PILES AT CAMERON COLLIERY

Illustration shows the slope of the mountain and of the culm bank, the general shape of the "breast." Sheet iron is run up the center of the breast, down which it usually runs by gravity, though sometimes coal will fail to run and help from a shovel is needed and given.

a tramroad was built along the mountain side with a slight grade in favor of the loads. Upon the upper side of this road chutes fitted with gates at their lower ends were constructed.

Into these chutes the coal was loaded by hand until the sheet iron could be put in place. After this was done the men mined the coal in such a manner that it would flow or roll naturally to the sheet iron and thence slide to the chutes. All that it was necessary to do was to remove some of the material from the toe of the slope, whereupon the coal higher up, seeking its natural angle of repose, flowed downward to the sheet-iron runway and thence to the chutes.

Of course in the winter, when the culm freezes in place, it is necessary to loosen it with explosives. Also at times or rather in certain places the angle of the sheet iron is not sufficient to induce movement of the coal and it becomes necessary to "buck" this material to the chutes, precisely as underground.

In this manner, however, twenty-nine men are now enabled to load as much as 600 tons of culm-bank material in one day. A single trolley locomotive hauls this culm to the breaker for preparation. One of the chief advantages of this method of handling is that the material arrives comparatively dry, thus permitting it to be unloaded from the cars without difficulty or delay.

Experts Inquire Whether the Super-Power Plants Should Be Placed at Mines

INVESTIGATIONS conducted by the Geological Survey are revealing certain difficulties, inherent but not by any means insuperable, in the use of coal for the super-power project that has been proposed for the electric supply of the region between Washington and Boston. One is that there will be a lack at the power plants of sufficient low-temperature water for the operation of condensing engines if these plants are located at the mines. It develops that the rivers in the bituminous and anthracite coal fields of Pennsylvania do not provide necessary facilities. The streams are either too small to provide the water required or the waters are so contaminated with corrosive substances carried down by drainage from the mines as to damage the boilers or plants.

It is estimated that 800 tons of condensing water is necessary for each ton of coal burned beneath a boiler. A river after receiving heated water from a plant must be allowed time to regain its natural temperature before the water from it can be used again. This may have a tendency to reduce the number of plants that can be established along the rivers. It is said that the water of the eastern branch of the Susquehanna River is too badly contaminated with sulphur from the mines to be suitable for use. The alternate discharging and storing of water by reservoirs in the Delaware River is an objection, as it would cause an irregular stream flow. Furthermore run-of-mine anthracite being too valuable to be burned under boilers, only culm or waste could be used for the steam raising, and it is feared that modern mining methods will soon reduce the proportion of culm to mined coal, so that at any single mine the power plant could not obtain sufficient culm for its needs. Transportation of coal from other mines would defeat the purpose of the plant, which is to save transportation as well as to reduce the consumption of coal. Another factor against power plants at anthracite mines is alleged to be the greater ease with which run-of-mine bituminous coal can be used for power plants.

DUTCH COAL MINE OWNERS have decided to reduce the wages of the miners by 16 florins per week, stating that otherwise they will be obliged to shut down the pits, according to a report from Amsterdam.

A FRENCH ENGINEERING COMMISSION has arrived in this country for the purpose of studying the water-power system of America with a view of conserving 40,000,000 tons of coal annually in France by the electrification of its railroads.

Powdered Coal as a Fuel

JUDGING by the sheaf of letters to be answered and the number of inquirers who invade the offices of *Coal Age*, the matter of pulverized coal is quite a lively one. So far, however, coal men seem to be less keen about the possibilities of that product than consumers, yet the manufacture of pulverized coal ought to be done at the mining plant and not at that of the consumer. To C. F. Herrington, a mechanical engineer, whose book entitled "Powdered Coal as a Fuel," D. Van Nostrand Co. has just republished with additions by the same author, pulverized coal is something that is, so to speak, "home brewed"—that is, made where it is used. Nothing appears in his volume about the transportation and marketing of powdered coal and nothing about its availability for steam-heaters in apartment houses, offices, schools and public buildings. One would not realize that it is now a vendible article and is being extensively sold in the West and Middle West.

It is not to be assumed, however, that the coal operator will not find this an intensely interesting publication. He will be able to see what coal is best suited to be used as pulverized material. He will learn that while ash as high as 52 per cent may not prevent the combustion, in boiler furnaces, of coal containing such a large percentage of impurity, it will create difficulties in the disposal of the refuse, part of it leaving by the stack to fall all over the surrounding neighborhood and part of it falling into, and blocking, the back connection. Should it slag, the fused ash will coat the cold surfaces of the water tubes and the linings of the furnace chamber.

There is like trouble metallurgically. There is apt to be slagging in the combustion chamber, slagging in the hearth and in the flues. The accumulation of slag in the hearth can be removed with the other slag; that in the combustion chamber by arranging to have it deposited on loose ashes. Slagging in the flues can be prevented by keeping the temperature so low that the slag cannot collect, all of which suggests that low ash is a great advantage and a non-slagging ash is to be preferred to one which fuses readily.

Poorly Dried "Home-Brewed" Powdered Coal

Returning to the "home brew" it seems that the cost of installation is so high that some companies are dispensing with driers, and to save first cost are using coal as received. From this practice the low efficiency attained does not deter them. Coal in Iowa was so wet and frozen that it was dynamited loose from the car. The coal was then thrown into the snow and elevated, snow and all, to the coal hoppers, where it was pulverized. The plant was operated without difficulty nor was there any failure to maintain the flame in the furnace, but the results were uneconomical, about 20 per cent more coal being used than if proper drying facilities had been available and utilized. Moreover it took more power to pulverize the coal by about 50 per cent.

It is clear that this way of operating would not do at all if conditions were always as bad as outlined. It could not have been maintained had not the moisture been usually far less. Mr. Herrington emphasizes the fact that the coal should be conveyed so that it cannot get wet and should be dried before pulverization. Grinding at the mines would obviate, especially where the mines are dry, the use of wet coal, thus saving a large percentage of the drying expense. Properly conveyed in closed tanks or cars it will arrive at the point of consumption dry and ready for use in its most economical form. At the same time the large first cost of building mills for each of the many plants is largely saved by a good milling center where the cost per ton of output will be greatly decreased. The time has long passed when each family grinds the flour it needs for its own table.

Powdered Coal Half as Costly as Fuel Oil

Those who would seek to enter the pulverized-coal business to supply the material for industrial purposes will find this book of 338 6 x 9-in. pages exceedingly useful. It shows the first and operating cost of a fuel-oil installation, of one burning water gas, of one installed with the screw-conveyor system of distributing powdered coal, and of one with an air-distributing system using coal of that character. The table may be thus summarized, with fuel oil as unity: As to first cost, fuel oil 1.0; water gas, 4.4; powdered coal (with screw conveyor) 4.0; powdered coal (with pneumatic distribution), 2.6. As to operating cost when interest on investment is considered the figures are: Fuel oil, 1.0; water gas, 0.9; powdered coal (screw conveyor), 0.8; powdered coal (pneumatic distribution), 0.6.

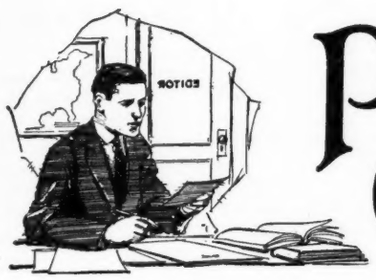
The book treats of the preparation of powdered coal, its use in cement plants, in metallurgical furnaces, under boilers, for locomotives, for annealing furnaces, air furnaces, anode furnaces, core ovens, continuous-heating furnaces, car-wheel furnaces, lime kilns, clay kilns, cathode and copper-reverberatory furnaces, forge furnaces, rivet making, sheet and pan furnaces, tin pots and tire furnaces. The firm that would sell coal for such purposes can learn from this book where powdered coal might be and is being placed though likely to overlook the non-industrial uses which have already been developed.

COMMUNISTIC TUMULTS IN GERMANY have had considerable influence upon coal production in the Ruhr district. During March the production decreased by about 2 million tons, chiefly in the mines situated on the left side of the Rhine. Negotiations with the miners regarding the reintroduction of voluntary extra shifts have not as yet been taken up again. These extra shifts formerly furnished about one million tons a month, or nearly half of the "reparation coal." It is expected that as soon as the new state laws fixing the working time for the collieries is passed by the Diet, the extra shifts will be taken up again.

THE BRITISH BOARD OF TRADE shows that the new companies registered in the United Kingdom during 1920 totalled 11,011, of which 425 were coal, iron and steel companies with a nominal capital of £38,375,641. During January and February of the current year 355 British companies increased their nominal capital. Of these, one, a colliery company, increased its capital £3,174,925.

ANTHRACITE COAL RATES from Pennsylvania mines to Philadelphia are declared unreasonable in a complaint to the Interstate Commerce Commission by the George B. Newton Coal Co., of Philadelphia.

IN AN ARTICLE ENTITLED "At Plumville Coal Is Dumped in Mine and Carried by Apron Conveyor to Tipple," the fact that the installation was made by the Fairmont Mining Machinery Co. was overlooked. To describe the machine without naming the maker is only one remove from quoting an author without giving him credit and *Coal Age* tries not to deprive anyone of his rights in this particular. The article appeared in our issue of April 21 on pp. 699 to 703.



Problems of Operating Men

Edited by James T. Beard

Building Chutes in Pitching Seams

Inclination of Chute Dependent on Nature of Coal and Its Condition—The Pitch Must Be Sufficient That Coal Will Slide Readily, but Not So Steep as to Unduly Break the Coal

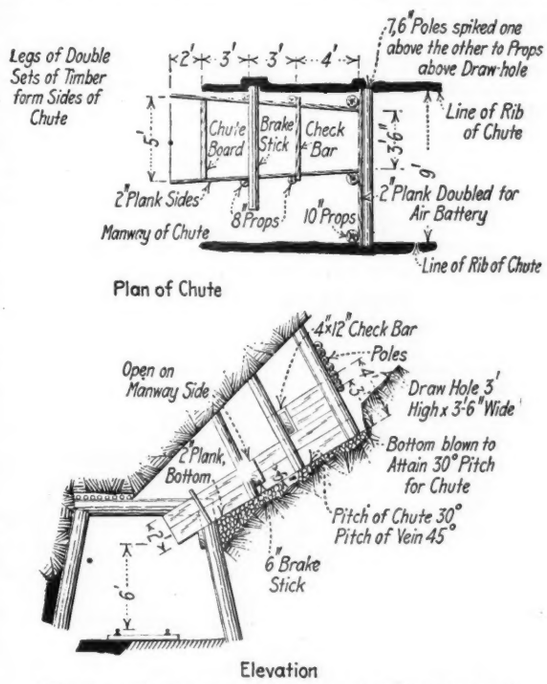
READING the inquiry of an engineer, asking the proper inclination of a chute for bituminous coal, *Coal Age*, Dec. 2, p. 1141, leads me to offer a few suggestions in regard to building a chute in a pitching seam, where the requirements are somewhat different from the building of a chute on a tipple, referred to in the reply to this inquiry.

As was stated in that reply, the proper inclination of a chute depends very largely on the nature of the coal to be handled and its condition, whether wet or dry, and the size to which it is broken. This applies to all chutes whether on the tipple at the surface, or underground. In the mine, many chutes are constructed on the natural floor of the seam, particularly if the bottom is hard and smooth. In that case, it has been my experience that the chute must be given an inclination of 32 deg., in order to have the coal slide freely and cause no delay in loading cars on the gangway. On the other hand, if the bottom is soft or irregular better results are obtained by lining the chute with sheet iron, in which case the inclination of the chute can be much reduced. In the reply given to the inquiry an inclination of 26 deg. was recommended for chutes lined with sheet iron when loading large lump coal, dry. Lining the chute gives cleaner coal and there is less breakage than when the coal is made to slide on the floor of the seam.

Frequently it will happen that the pitch of the seam is too great to permit the chute to be built in the floor in the usual manner. For example, a seam having an inclination of, say 50 deg. would cause an undue amount of breakage in loading if the chute is given the same pitch.

In order to overcome the difficulty presented on steep inclinations, therefore, it is necessary to excavate the bottom of the seam so as to permit the chute to be built with a suitable inclination and afford easy and safe loading. To make this clear I have prepared a sketch showing the plan and elevation of a loading chute in a steep seam. The pitch of the seam is shown as 45 deg., while the incline of the chute is only 30 deg.

What is important in building a chute of this kind is to provide check-bars supported by posts set in the seam in such a manner as to resist a great rush of coal. The chute is shown as lined with 2-in. planks on the bottom, which requires a somewhat greater inclination than in the use of sheet iron for that purpose.



PLAN AND ELEVATION OF LOADING CHUTE

Having had considerable experience in building chutes in mines, both in France and Belgium, permit me to refer to a few of the details employed in that region. One point was to give a good clearance between the top of the car and the lip of the chute, which avoids much delay in loading, as it permits the coal to fall free of the end of the chute and the movement of the loaded car is not obstructed.

As shown in the plan in the figure, the excavation at the lower end of the chute is made wide enough to permit the loader to pass up the chute a short distance, for the purpose of operating the brake-stick that controls the loading of the coal. The sides of the chute proper are widened toward the bottom to prevent any clogging of the chute, which would often occur if the width was uniform throughout.

Construction of Battery to Insure Safety in Loading

A strong battery of heavy logs or poles is constructed just above this loading space and a manway is built up one side of the breast to enable the miner to reach the face of the coal. This construction provides a safe means of loading the coal mined on steep pitches. Under no conditions should a miner be permitted to enter a chute that has become blocked. He must dislodge the coal by working from the side of the chute. Many a miner has lost his life by crawling into the mouth of a chute to dislodge the coal.

The work of building a chute must be entrusted only to reliable and experienced men, and the work performed with as much care as building an overcast, setting up a mine door, or timbering a shaft. In mining coal on steep pitches a self-acting incline will often be found more profitable than to load the coal from chutes. In the latter case it is almost impossible to avoid breaking the coal and producing much slack.

Chute mining, however, possesses the advantage of allowing smaller roads or gangways and requires less brushing of the roof and lifting of bottom. The method is much used in mining seams of coal on steep inclinations.

GASTON F. LIBIEZ,
Peru, Ill. Face Boss.

Qualified Shotfirers

Shotfiring a dangerous occupation, calling for the same qualifications, when performed in a gaseous mine, as those required of a competent fireboss in mines of the same character.

ATTENTION is called, in the excellent letter of R. W. Lightburn, *Coal Age*, Feb. 10, p. 276, to the growing need of examination and certification of men employed as shotfirers. This is a timely question and cannot fail to appeal to those acquainted with the work.

No one who has been exposed to the dangers of shooting coal will deny that the men selected to perform the duties of the shotfirer must be competent and capable of doing the work with safety

to themselves and the mine. I fully endorse the suggestion that these men should be examined by an authorized board of examiners and certified as to their competency.

We demand that a fireboss shall possess certain qualifications that will fit him for that work. The firing of shots in mines is equally dangerous with the examination of working places for gas, and most men will agree that the shotfirer belongs in the same category with the fireboss.

If this is true and we require the rigid examination of candidates for the position of fireboss, why should not our mining laws demand the same of the men who are to act as shotfirers in mines? While this work is dangerous, there is no doubt but that it can be made safe if proper precautions are taken to insure the competency of the men selected for the task.

Requirements of Colorado Law Regarding Shotfirers

In Colorado, the mining law (Sec. 40) requires the examination of shotfirers by the chief or deputy inspector when either of these officials visits the mine where the candidate is employed. The law further permits the mine foreman and fireboss of a mine to question the man they select for the work of firing shots and, having satisfied themselves as to his fitness, to employ him in that position until the next visit of the inspector to that mine.

While this may serve well enough in a non-gaseous mine, I believe that where a mine is generating much gas the requirement in respect to shotfiring should be more exact. Before a man is permitted to perform that work in a gaseous mine, it is my opinion his competency should be determined by a strict examination before a properly constituted examining board.

The mine where I am employed is classed as a gaseous mine, although the working places are not generating gas in dangerous quantity. The greatest trouble in this mine is experienced where pillars are being drawn and gas accumulates on top of the falls where it is difficult to remove.

Safety Precautions Taken in C. F. & I. Co.'s Mines

The mine is equipped with electric cap lamps of the Edison type. Only permissible powder is used in blasting and all shots are fired with an electric hand battery, after the men have left the mine. Taking these precautions, we have not had an accident here in the past five years.

The mine is owned and operated by the Colorado Fuel & Iron Co. It is visited every sixty days by the deputy state mine inspector. The company mine examiner makes a visit to the mine every ninety days, and, under the regulations of the Rockefeller Industrial Plan, a Safety and Accident Committee also go through the mine every ninety days.

I believe I am safe in saying that, owing to these frequent visits and careful examination of the workings to discover and eliminate any dangers that may be found, this mine is one of the safest mines in the state. My wish is that all mines were equally well safeguarded.

Farr, Col. Robert A. Marshall.

Precautions in Shotfiring

Eliminate bad practices if shotfiring in the mine is to be made safer. Establish a good set of rulings and live up to them.

THE suggestion offered by R. W. Lightburn, that shotfirers should be compelled to pass an examination before they are allowed to fire shots in mines, is well put. It is the first expression of this kind that has come to my notice, though it has been my opinion for a long time.

While the examination of candidates for shotfiring is a great factor in securing safety, there are other precautions that should be taken to avoid the accidents that so frequently occur in the firing of shots. My observation shows that one frequent cause of these accidents arises from defective firing cables. In the rough usage to which the cables are submitted in the mine, it is almost impossible to keep them in perfect condition and safe for use.

Use of an Automatic Winding Spool in Blasting

To avoid danger from this source, let me say that every shotfirer should be equipped with an automatic spool by which the cable is wound up under the action of a spring. In the use of such a device the cable need never be left to lie along the road while the shotfirer is making the connection with the detonator at the face.

There is no safety when a shotfirer is compelled to approach the coal face and make this connection when the cable is lying back on the road with no certainty but that it is in contact with a return rail at some point.

When using a spool, however, the shotfirer carries the cable with him, makes the connection with the shot to be fired and retires in safety, allowing the spool to unwind as he goes. The cable is thus kept in good condition and its life lengthened.

It can be said that practically all of the accidents that occur from shotfiring in mines are due to carelessness or lack of judgment on the part of the man firing the shot. It is bad practice for a shotfirer to work alone. Always two men should be employed and they should work together, though I only know of one mine where that plan is followed.

The mine is opened in a 5-ft. seam and employs from thirty-five to forty men. Electric cap lamps are used exclusively and all shots are fired by two shotfirers after the men have left the mine. One of these men has mine foreman and fireboss papers, while the other is a practical miner.

The first man examines and charges the holes, while the second man follows a short distance behind and fires them, using for that purpose an electric firing battery. They start the work from the return side and are thus constantly in fresh air, which is the safest practice.

By this plan all caps and powder are in the charge of and handled by one man and there is no danger from possible contact of these explosives with the firing cable or battery. The second man has the cable, the battery and the key in his possession. Though the miners all use electric cap lamps, these shotfirers use Wolf lamps in performing their work.

Safety Requires Strict Rules and Regulations Enforced

I understand that this mine is operated under strict rulings and everything is closely watched by the mine foreman. If these precautions can be taken in one mine the question is, Why should they not be equally effective in other mines?

There are numerous operations where the miners call every morning at the powderhouse and are given all the powder they want. They carry this together with the caps into the mine, store it away where they please and give it no particular attention until they are ready to shoot. No one will deny that this is bad practice. Miners should never be allowed to handle explosives, much less to use them.

While looking through some old scrap books of mine recently I found a set of rulings that were made by T. Mullen, who was then company mine inspector for the H. C. Frick Coke Co. One of these rulings read: "Never tell a miner how to drill his holes, but stay with him and show him."

To my mind, to establish such a set of rulings and work to them is a token of safety. I notice that examining boards have dropped the standard for firebosses to 65 per cent. With this lowering of standards, it would seem more than even important that safe rulings should be established in every mine and that mine officials should see that they are followed fully.

John H. Wiley.

Oliphant Furnace, Pa.

Skill in Mining Coal

Skill does not consist in the ability to imitate another or carry out orders and follow instructions, working by direction as a machine. Skill is intuitive and involves a knowledge of how and what to do under the varying conditions in mining.

IT IS some time since the question was discussed in *Coal Age* as to what constitutes a skilled and practical coal miner. I followed those letters with deep interest, but practially all of them treated the matter with little reference to its practical side. It seemed to me that most of the writers assumed to take a narrow view of the question, looking to their own personal interests as employees of large corporations.

It is quite true that there are men

who, apparently, could never learn a trade if they lived and worked a thousand years. On the other hand, there are those who are quick to perceive what is wanted and learn to imitate the actions of others, working under their direction as a machine.

To my mind, the question is: Can we regard these latter in any other light than as mere imitators? Many large corporations have been hiring endless numbers of such workers, until we are compelled to admit that there is no longer the same practical skill that marked the miner in the earlier days.

There is an old saying "Experience is the only school in which to learn," and most of us can verify the truth of that statement. The history of coal mining is strewn with the wrecks of corporations who have spent thousands of dollars in learning what is required in successfully operating their business.

Men Required Today Who Know and Understand the Business

Up-to-date coal companies of today, however, have passed that stage and will not place men at the head of affairs who lack the knowledge and experience required in their business. A foreman must be a man of experience, a machine runner must understand his machine and be able to operate it successfully in the mine.

No one will dispute the fact that, in many of our modern mines where the coal is mined with machines the chief, if not the only qualification of a miner, is strength of back that will enable him to wield the shovel all day. Little regard is had for the knowledge and skill that would enable him to protect himself and avoid accident under the constantly changing conditions of roof and coal.

The roof above the miner may be limerock, hard slate, soft slate, shale or sandstone and may be full of slips that require careful watching to avoid accidents.

Practical Side of the Question

Judging this question from the practical standpoint let me ask, Will a green man be able in a short time to discern these conditions that surround him in his work and to know when he is in danger and must take precautions to safeguard himself. What has taken years of experience in mines to enable old miners to protect themselves and to take out the coal with the least loss and hazard cannot be learned in a brief period or taught by rule of thumb.

Believing that the purpose of the original letter on this subject was to bring out a clearer and more definite idea and conception of what constitutes a practical skilled miner, I have attempted in a few words, to emphasize the intuitive knowledge gained by years of experience in mines, which to my mind is the chief factor that constitutes skill in mining.

Though methods and equipment have changed with time, the miner must still contend with the same natural conditions that have always existed. These conditions will often be aggravated by the failure of a miner to set his timbers where and how experience alone can teach him.

Unskilled miners are, today, costing the companies who employ them large sums by reason of the avoidable loss of coal due to their lack of skill. Other large sums are required in the payment of indemnities for accidents that a skillful miner would have avoided. Notwithstanding these hard facts, practical skill in the mining of coal is fast disappearing from our mines.

Staunton, Ill. W. M. Chambers.

Inquiries Of General Interest

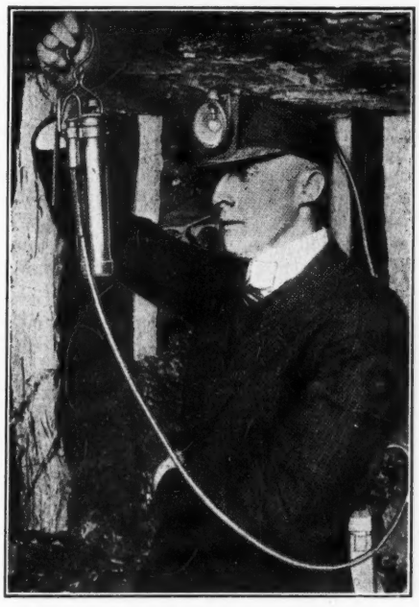
Testing With the Burrell Gas Detector

Description of Instrument; Principle of Action and Method of Making a Test for Gas in a Mine. A Portable and Effective Means of Ascertaining the Proportion of Methane, in Mine Air, as Low as One-Tenth of One Per Cent

KINDLY explain the construction, principle and use of the device known as the "Burrell Gas Detector." We have heard numerous reports of this device being used with good success in mines, instead of employing the usual method of testing for gas with the safety lamp. I am interested in learning more of this device and its use. John H. Marsh.

Taber, Alta., Canada.

The Burrell Gas Detector is one of the recent devices for detecting the presence of methane or marsh gas in mine air. It was designed by George A. Burrell, chemist, U. S. Bureau of Mines, in 1916.



MAKING A TEST IN THE MINE

The device consists of two tubes, jointly mounted and connected at the bottom so as to form what is essentially a U tube after the manner of a water gage. One of the tubes is of brass and surmounted by a screw-cap having a valve and two binding posts connected with a fine platinum-wire bridge just below the cap, in what may be termed the combustion space at the top of the tube.

The other tube is of glass and provided with a brass cap to which is attached a short rubber tube. A graduated scale is mounted between the two tubes. The zero of this scale is at the top and just below the level of the platinum-wire bridge previously mentioned.

In the use of this instrument the glass tube is filled with water, which rises in the brass tube until it stands at the same level in each tube, as marked by the zero of the scale. When filling the instrument with water the valve in the top of the brass tube is, of course, opened. The instrument is now ready for use.

In the accompanying figure, the operator is shown as observing the reading of the instrument, on the graduated scale, after a test has been made. To make the test the operator first blows gently into the rubber tube previously mentioned, thereby depressing the water in the glass tube and causing it to rise till it completely fills the combustion space at the top of the brass tube, as indicated by a slight click of the valve when the water strikes it.

The operator now pinches the rubber tube tightly between his thumb and finger and raises the instrument toward the roof, or wherever he desires to take a sample of the air. Then releasing the rubber tube, the water level sinks in the brass tube and rises in the other branch until equilibrium is established and the level in both tubes again corresponds to the zero of the scale. The combustion space in the top of the brass tube is thus filled with a sample of the air to be tested.

The valve is now closed and the operator turns on the current from his battery, causing the incandescence of the platinum-wire bridge, with the result that any gas present in the air is con-

sumed, forming carbon dioxide and water vapor, the latter being quickly condensed and eliminated.

After two minutes, the current is turned off and the instrument shaken or turned so as to permit the water to flow into the combustion space, for the purpose of cooling the air remaining therein and reducing it to its original temperature before taking the reading of the instrument.

As is well known, the burning of one volume of methane consumes two volumes of oxygen and produces one volume of carbon dioxide. The three original volumes of methane and oxygen, being replaced by one volume of carbon dioxide, the contraction of volume is twice the volume of methane burned, as shown by the equation.

Methane		Oxygen		Carbon Dioxide		Water
CH_4	+	$2O_2$	=	CO_2	+	$2\ H_2O$
1 vol.		2 vols.		1 vol.		2 vols.

The graduated scale has been calibrated on this principle to read percentages of gas present in the air. It is claimed that this instrument gives an accurate reading as low as one-tenth of one per cent, as determined by subsequent analyses of the same air samples, in the laboratory.

As shown in the figure, the same battery is employed, in making a test with this device, as operates the miner's electric cap lamp. For this purpose, the cable connected with the instrument has a terminal plug that can be inserted into a hole provided in the battery for the purpose. This does not interfere with the illuminating power of the cap lamp, while the test is being made.

It may be remarked here that there is a possibility of the carbon dioxide produced in the test, being absorbed in the water when the instrument is shaken. Also, if the water is not properly aerated before making the test, some of the air may be absorbed by the water at the same time. It is probable, however, that due allowance has been made for these conditions in the calibration of the instrument. The advantage in the use of this device is that it enables an accurate test to be made at the point and at the time when the sample is taken. It is not, however, a sight indicator that tests the air without sampling.

Examination Questions Answered

Miscellaneous Questions Asked at Different Anthracite Examinations

(Answered by Request)

QUESTION—*State how the several mine gases may be detected. In what proportion in the air are they fatal to life? In what proportion do they extinguish lights?*

ANSWER—Methane or marsh gas (CH_4) when present in mine air is detected by observing the action of the flame, or detecting the appearance of a flame cap in a safety lamp. Carbon monoxide (CO), present in an extremely small percentage in the air, may be detected by observing its effect on small animals such as caged canaries or mice, which are prostrated more quickly than men. Less than one per cent of this gas is fatal when breathed but a short time.

An instrument for detecting as little as 0.1 per cent of this gas, by a color test, has recently come into use. Carbon dioxide (CO_2) when present in the air causes the miners' lamps to burn dim or extinguishes them completely if a larger portion of the gas is present. Sulphureted hydrogen, or hydrogen sulphide (H_2S) if present in the air is detected by its smell.

Methane is not poisonous to the human system but causes death by suffocation when slightly more than 50 per cent of the gas is present in otherwise normal air. The oxygen content of the air is thereby reduced to about 10 per cent, which is not sufficient to support life. Less than one per cent of carbon monoxide may be *instantly* fatal if breathed; and one-tenth of one per cent of the gas is fatal when breathed a sufficient time, varying with the strength and health of the person. Owing to a certain toxic effect of carbon dioxide on the system, 18 per cent of that gas, present in the air, is fatal if breathed for any length of time, although the oxygen content of the air is only reduced to 17.1 per cent if the air is otherwise normal. Hydrogen sulphide is poisonous, one per cent causing death when breathed but a short time.

About 30 per cent of methane present in otherwise normal air reduces the oxygen content of the air to 14 per cent, which is extinctive of a wick-fed flame burning a non-volatile oil. Carbon monoxide present in the air is not extinctive of flame, as far as is known. About 14 per cent of carbon dioxide, present in otherwise normal air, is extinctive of a wick-fed flame burning a non-volatile oil. Hydrogen sulphide present in the air is probably extinctive of flame to the same degree as methane, namely, 30 per cent.

QUESTION—*Are there any conditions under which flame will pass through the gauze of a safety lamp? Explain fully.*

ANSWER—Assuming a standard wire gauze properly adjusted on a safety lamp, this will only prevent the passing of flame when the gauze is in perfect condition, clean and free from oil and dust and the lamp carefully handled and not exposed to a sudden rush or blast of air. A safety lamp is no longer safe when handled by an inexperienced person carelessly or when not properly cleaned, assembled and inspected. The lamp is not safe when the gauze has become heated by exposure to a gas-charged atmosphere, or not properly protected from a strong air current.

QUESTION—*Two airways have each an area of 64 sq ft. and their lengths are each 3,000 ft, one of the airways being circular and the other square. Is there any difference in the rubbing surface? If so, how much?*

ANSWER—For the same sectional area, the perimeter of a square airway is practically 1¼ times that of a circular airway; and, for the same length of airway, the rubbing surfaces will be in the same proportion. For example, the diameter of a circular airway having a sectional area of 64 sq.ft. is $\sqrt{64 \div 0.7854} = 9.027$ ft.; and its perimeter, 3.1416×9.027 ft. $= 28.36$ ft. The rubbing surface for a length of the circular airway, of 3,000 ft., is $3{,}000 \times 28.36 = 85{,}080$ sq.ft.

On the other hand, the side of a square airway whose sectional airway is 64 sq.ft., is $\sqrt{64} = 8$ ft.; and its perimeter, $4 \times 8 = 32$ ft. The rubbing surface of the square airway, for the same length, is therefore $3{,}000 \times 32 = 96{,}000$ sq.ft., which is practically 1¼ times that of the circular airway, as previously stated.

QUESTION—*What produces whitedamp in the mines? What are its injurious effects on the workmen employed therein? How would you treat a man overcome by whitedamp?*

ANSWER—"Whitedamp" is a term applied by miners to the presence of carbon monoxide (CO) in the mine air. It results from the incomplete combustion of carbon, owing to a limited supply of air. Whitedamp is produced by gob fires, firing of shots in close places and explosion of gas or dust in mines.

The effect of breathing very small percentages of carbon monoxide in air is to poison the system by its absorption in the blood. This effect is cumulative and therefore dangerous to health. It has a toxic effect on the nervous system, causing a general debility and loss of vitality, the victim becoming nervous, weak and helpless. Less than one per cent of this gas breathed but a short time will cause death.

The treatment of men overcome with whitedamp is the forced inhalation of pure oxygen by means of a pulmotor, which pumps the oxygen into the lungs.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

BANKING credit, according to *Commerce Monthly* issued May 1 by the National Bank of Commerce in New York, cannot be substituted for reduced capital and credit lines must be commensurate with present assets. "Business must now recognize," the report continues, "that it cannot operate on borrowed money to the same extent as before capital was impaired. It is unsound to attempt to maintain the former high aggregate of credit lines after a year of heavy losses. Easier credit conditions and cheaper rates would not alter this fact. . . .

"Fortunately, some of the very factors which have combined to make credit liquidation desirable also make an adequate volume of business possible on a smaller credit base. It will take less money to do business on a lower price level, even though further increases in production and sales, as measured by physical volume, may take place. Elimination of the speculative element from business and the trend towards conservatism should bring about more rapid turnover. For a time also it may well be that even when measured by physical volume, the total of business will be smaller and with sharper competition goods will be better made and replacement requirements appreciably lessened. . . .

"In spite of some orders from the automobile industry and for pipe making, the buying of steel is entirely in the form of small orders for prompt delivery, and a disposition on the part of buyers to distrust the future course of the market is plainly apparent. . . .

"Cotton consumption has increased steadily during the last three months. Staple goods are selling well, but business in fine fabrics is far below normal. . . . Improvement in woolen and worsted manufactures is indicated both by trade reports and government statistics of active and idle machinery. . . . Conditions in the silk industry are more satisfactory at this date than in either of the other major textiles."

Machine Plant on Full Time

The Taft-Peirce Manufacturing Co., of Woonsocket, R. I., announced May 6 that its plant, employing 700 persons, would be shut down for a week, and would reopen May 16 on full time. The plant, which manufactures machinery and tools, has been operating four days a week.

Foreign Trade Still Shrinking

Foreign trade of the United States continued to fall off in April, figures made public May 11 by the Department of Commerce show. Exports of $340,000,000 compared with $387,000,000 the month before and $648,000,000 in April, 1920. Imports last month increased $3,000,000 over the $252,000,000 total the month before, but were $241,000,000 below the April, 1920, mark. The trade balance in favor of the United States for the month was approximately $85,000,000, far below the monthly average for a number of years. For the ten months' period ended with April, however, the trade balance was something over $100,000,000, more than for the corresponding ten months the year before.

15,000 Paper Mill Hands on Strike

Information received by union officials indicated that more than 9,000 paper-mill workers in the United States and Canada went on strike May 11, making a total of about 15,000 workers who have gone out since May 1 as the result of wage reductions of 30 per cent proposed by the manufacturers. Union leaders declare that the seven mills forced to close down May 11 produce 4,000 tons of news-print daily, or about 60 per cent of the total output.

Mill 8 Months Idle Resumes

The Sanford Spinning Co. plant at Fall River, Mass., owned and operated by the Passaic Cotton Mills Corporation of Passaic, N. J., resumed operation Monday, May 9, after having been wholly shut down since last September.

Large Rail Order Placed

The Algoma Steel Corporation, of Toronto, has received an order from the Dominion Government for 50,000 tons of rails for the Canadian National Railways. The plant at Sault Ste. Marie is in full operation on the contract, which will require about two months to complete. Two thousand men are at work.

Cotton Goods Mill Speeds Up

The Nashua Manufacturing Co. of Nashua, N. H., announced, May 5 that it would operate on a basis of 48 hours a week instead of on the 35-hour schedule which was put into effect last January. The company, which manufactures cotton goods, employs 5,000 persons. The new schedule goes into effect immediately, the announcement said.

La Belle Iron Works Opens

That the La Belle Iron Works plant at Steubenville, Ohio, would resume operations May 16, when more than 1,000 men were expected to return to work, was announced by officials of the company May 9.

Union Pacific to Extend Lines

Contract for what was said to be the first piece of railroad construction work in the West since the war was let by the Union Pacific Railroad Co., May 10. It calls for the grading and bridging of forty-two miles from Haig, Neb., into Wyoming. The new line is to be an extension of the road's North Platte Valley line.

Idlessness Decreases in Illinois

Figures made public in Chicago May 11 by the State Employment Agency of Illinois show that unemployment is decreasing in Chicago and generally throughout the State.

Ford to Make All Own Forgings

Orders were placed last week by the Ford Motor Co. for more than 100 giant drop forge hammers, costing in excess of $1,000,000, it was announced May 11. This equipment will give the Highland Park plant the largest drop-forge plant in the world with the possible exception of the Krupp works in Essen, it is said. The new equipment is designed to produce every steel forging used in construction of passenger cars, trucks and tractors.

Government Fuel Yard Receives New Bids of $2.80-$4.76; March Figures $3.50-$4.82

NEW bids were received by the Bureau of Mines on May 10 from twenty-one coal firms for supplying the Government Fuel Yard in Washington with bituminous coal for the ensuing year. These bids were received following the rejection of proposals recently submitted. Prices ranged from $2.80 to $4.76 at the mine, as compared with earlier figures of $3.50 to $4.82. The bid of H. P. Brydon & Bros., Piedmont, W. Va., was the lowest submitted. The bids follow:

Rockwood Coal Co., Mt. Union, Pa., 10,000 tons Pennsylvania coal, $3.75; same quantity but different analysis, $3.25.

C. J. Rowe Bros., Myersdale, Pa., 60,000 tons Maryland coal, $3.50.

Jenkins & McCall Coal Co., Frostburg, Md., 20,000 tons Maryland coal, $4.20.

D. E. Williams & Co., Philadelphia, 25,000 tons Pennsylvania coal, $3.80.

Maryland Coal & Coke Co., Philadelphia, 25,000 tons W. Va. smokeless nut and slack, $3.19.

H. P. Brydon & Bros., Piedmont, W. Va., 126,000 tons northern West Virginia coal, $2.80, conditioned on bid being accepted before June 1.

White Oak Coal Co., New York, 50,000 tons New River coal, $3.92; 25,000 tons New River nut and slack, $3.36.

Steinman Coal Mining Co., Philadelphia, 10,000 tons, $4.70.

Flat Top Fuel Co., Bluefield, W. Va., 61,000 tons New River mine run, $4.48; 7,000 tons nut and slack, $4.20.

W. D. Althouse, Philadelphia, 6,300 tons Maryland coal, $3.64.

Line & Reed, Baltimore, 20,000 tons Pennsylvania mine-run, $4.07; 15,000 tons, $4.18.

P. & S. Coal Co., Baltimore, 100,000 tons Pennsylvania coal, $3.695; 40,000 tons, $3.595.

Equitable Fuel Co., Baltimore, 45,000 tons, $4.08; 45,000 tons, $3.91; 11,000 tons, $3.53; 9,000 tons, $4.47; 45,000 tons, $3.91; all Pennsylvania coal. Pennsylvania gas coal, 1,600 tons, $3.92.

Fayette Smokeless Fuel Co., 61,000 tons, $3.75 from June to September, and $3.90 thereafter.

Georges Creek & Phoenix Mining Corporation, Philadelphia, 14,000 tons Maryland coal, $3.36 until Oct. 1; $3.81 thereafter, or $3.64 for the entire period.

C. G. Blake Co., Cincinnati, 43,000 tons W. Va., mine run, $4.20; New River nut and slack, $3.92. Corresponding bids of $3.92 and $3.64 if paragraph 9, relating to wage scale changes, is eliminated.

Commercial Coal Mining Co., Philedelphia, 30,000 tons Pennsylvania coal, $4.20.

Chesapeake & Ohio Coal & Coke Co., New York, 61,000 tons West Virginia coal, $4.20.

Consolidation Coal Co., Washington, D. C., 30,000 tons Pennsylvania mine run, $4.48; 1,500 tons West Virginia gas coal, $4.76.

Allegheny Coal Co., 15,000 tons Maryland coal, $3.60. Pittsburgh (Pa.) Coal Co., 1,600 tons Pennsylvania gas coal, $4.20.

Creditors File Petitions in Bankruptcy Against Old Tidewater Coal Exchange

PETITIONS in involuntary bankruptcy were filed by James F. Curtis and Root, Clark, Buckner & Howland, attorneys, against the Old Tidewater Coal Exchange of New York in the District Court for the Southern District of New York on May 9 and on May 12. The creditors signing the first petition were W. H. Bradford & Co., Emmons Coal Mining Co., Weston Dodson & Co., Inc., and Majestic Coal Co., Inc.; on the second petition the creditors were the New England Coal & Coke Co., the Seaboard Byproduct Co. and Dexter & Carpenter, Inc. It is understood that the second petition was merely supplemental to the first, alleging as an additional act of bankruptcy that the exchange had on May 11 admitted in writing its inability to pay its debts and its willingness to be adjudged a bankrupt. As the exchange terminated its active operations at the end of April, 1920, no application was made for a receiver.

Colonel Lloyd C. McGrum, general manager of W. H. Bradford & Co. and chairman of the recently organized creditors' committee of the exchange, gave out the following statement with reference to the filing of the petitions:

"Our creditors' committee was organized with practically all of the largest creditors of the exchange represented in its membership in the hope of liquidating the affairs of the exchange without a bankruptcy. With this in view letters were sent to all of the creditors of the exchange inviting their cooperation, and these invitations met with such a gratifying response that the committee had high hopes of success.

"Upon investigating the accounts and records of the exchange, however, the situation was found to be so involved as a consequence of the various attempts which have been made to adjust the obligations of debtors that there seemed to be no alternative except to file a petition in bankruptcy. This decision met with the full concurrence of the executive committee of the exchange, as is further indicated by its action on May 11 in admitting its insolvency. The bankruptcy makes it none the less important for the creditors' committee to act together in an effort to realize the largest possible amount from the obligations of the debtor members of the exchange. There is no intention of dissolving the creditors' committee, but, on the contrary, we shall invite the continued cooperation of those who have already joined with us in the preliminary steps, and we shall welcome any additions to our number, and shall be glad to co-operate with all debtors in the settlement of the claims of the exchange against them."

Pennsylvania Governor Signs Anthracite Tax Bill; Effective July 1

GOVERNOR SPROUL of Pennsylvania on Wednesday, May 11, affixed his signature to the bill imposing a tax of 1½ per cent ad valorem on all anthracite coal effective July 1. The tax is to be applied when the coal is prepared for market. The bill originally contained a clause that the tax could not be passed on to the consumer, but this was eliminated in the closing days of the Legislature.

A somewhat similar law enacted several years ago was declared unconstitutional on the ground that it was class legislation. The protest of hard-coal operators is again based on the assertion that the act leaves bituminous coal untaxed and is therefore partial.

No Reduction in Miners' Wages, Says Lewis

JOHN L. LEWIS, president of the United Mine Workers of America, predicted in a statement issued May 5 at headquarters in Indianapolis that there will be no reduction in mine workers' wages. He declared the United Miners would resist any attempt to disturb the present relations between employers and employees and urged the public not to delay the purchase of coal in the hope that wage cuts will bring cheaper fuel.

Mr. Lewis' statement is as follows:

"There will be no reduction of wages in the organized sections of the coal-mining industry. The mine workers are now working under a scale of wages fixed by the U. S. Bituminous Coal Commission, created by the President, and which functioned under governmental authority.* These wage schedules were written into an agreement between miners and operators, which will not terminate until March 31, 1922.

"There can be modification or abrogation of this agreement in any coal-producing district without disturbing the integrity of the contract throughout the nation. The United Mines Workers will resist any attempt to replace the present contract. The acute depression in the mining industry now confronting us, with consequent wide-spread unemployment and distress among the mine workers, is not in any way attributable to the wage schedule now in effect. Production costs at the present time are such as to enable coal to be produced and furnished the consuming public at a price relatively lower than any other basic or essential commodity.

"Users of coal should not delay purchase upon the theory or with the hope that any reduction of wages will be accepted by the miner workers. Statements to the contrary have no basis in fact."

*This is not strictly true, the mine workers having received an increase since that time as the result of agitation and a violation of the terms of the agreement.

STRIKE CLOSES BENTON MINE OF U. S. STEEL CO.—Refusal to give the mine examiners of the Middle Fork mine at Benton, Ill., pay regardless of the regularity of operation has resulted in a strike by which 700 men are laid idle. The mine is operated by the United States Fuel Co., a subsidiary of the United States Steel Corporation. William Brinley, superintendent of the plant, is said to have declared that the company is quite indifferent as to whether the mine works or is idle.

We Need Fewer Laws But More Sanity in Enforcing Those That We Now Have*

By John E. Lloyd

THE problems of retail coal distributors are many and varied and should be given careful and serious thought. In our discussions we must not lose sight of the fact that we are "In the public service" and that the well-being and happiness of the public depend largely on our ability to function properly. The retail coal dealer who serves the public best is the greatest asset to the association, as it is only through public confidence gained by unselfish service to the public needs that we can continue to prosper.

The association has a great future before it, a future in which its members will be respected and depended upon in every community they serve. We as retailers fail in our duty unless we give our active support to our local, state and national associations; it is not enough to be mere members. We should be proud of our membership and should let the public in our community know of our association and that it stands for a square deal and their protection. Make your association a force for better business methods. Let your standards be so high that a retail coal dealer who is not a member will be regarded with suspicion.

The truth is not always pleasant, but I feel that it is my duty before retiring from office to give you in detail some thoughts in regard to the coal business.

Standardized Preparation an Important Matter

The matter of sizing and preparation is a serious one in both bituminous and anthracite. All should co-operate for the purpose of putting on the market coal of standard preparation and size that will be the most economical for the consumer. This standard preparation and size should be maintained by all companies alike and no changes should be made without first consulting the retailers and then explaining to the public the reasons for the changes. Instead of doing this, the producer of coal has gone ahead and made changes without properly considering the effect on the domestic consumer.

No real effort has ever been made to create a market or to show the consumer the most economical and best method of burning coal. The anthracite operators complain there is no market for the small sizes—No. 1 buckwheat and smaller. This is true, but a market can be created if the operators are willing to use modern, up-to-date merchandising methods, but so far nothing practical has been done.

Examine the methods of the gas and oil companies and note the results obtained. Every expert coal engineer knows the smaller sizes of anthracite can be used to better advantage and at less cost for private homes, in many cases, than the so-called domestic sizes. However, architects and builders continue to specify ranges and furnaces that will burn only the domestic sizes of pea, nut, stove and egg.

Co-operation Would Increase Consumption

Just a little co-operation between the operator, wholesaler and retailer would create a market for buckwheat sizes and a better market for pea for domestic consumption. This would enable operators to obtain a better average price on all coal sold and at the same time allow them to make a reduction on the sizes now used for domestic consumption.

There should be a permanent joint committee of operators, wholesalers and retailers, in both anthracite and bituminous, who should meet at regular intervals to discuss and plan ways for improving the coal business. The coal trade has been so long and so unjustly criticised by the public press that many engaged in the production and distribution of coal appear to be afraid to meet and discuss mutual problems. This would be of immense benefit to the consumer, if properly carried through. It is only through co-operation that we can expect to continue our freedom of action and eliminate for all time the uneconomical conditions which are bound to follow any attempt at government regulation or control.

By co-operation I do not mean that any one branch of the coal industry should attempt to dictate to the other. Each has its distinct function to perform and each should exert all possible energy and ability on its own end of the job. Let us make suggestions to each other, let us work in harmony and be willing to do anything that will help in the proper merchandising of coal, to the end that the public may be well served; but when we have done that we have no right to go further.

Expect Assistance from Secretary Hoover

In this connection we must not lose sight of the fact that there has been a change of administration at Washington. I believe President Harding and his Cabinet are sincere in their wish "to keep government out of business and put business in government," and we should lend every effort to help. Mr. Hoover, Secretary of Commerce, is especially interested in business and can be counted on, I firmly believe, to assist us in any proper co-operation that will assure a more equitable distribution of coal. Until we as business men give more attention to our government, we cannot expect much improvement in present day problems.

To quote from *Collier's Weekly:* "More business in government means but one thing, if it means anything at all. It means that more business men must pay attention to public affairs. It means they must exercise as much concern over what is going on day by day at Washington, at the State Capitol and the City Hall as they do over what is going on in Wall Street and the ball park and the golf links."

We should get together and study our mutual problems. If we do not and the coal business is continued along the old-fashioned ideas of today, we can expect nothing but government control, and in the end the public will be the greatest sufferer. You are at the parting of the ways and your choice cannot be much longer delayed. Co-operate and do business on a modern merchandising basis and have the government, the public and the press back of you; or continue as you have in the past and you will no longer be free to do as you please, but will be regulated and controlled by the government.

Suggests Combining Yards to Cut Expenses

How can we as retailers distribute coal at less cost to the consumer? One way, I very frankly believe, is by encouraging combinations of existing retail yards. In most places there are entirely too many yards rather than too few. I believe a few companies with yards properly distributed can serve the public to better advantage than the same number of yards each under different management.

Another factor in the cost of coal to the consumer is that the retailer does not sell all the coal that is distributed at retail in his community. By this I mean that others than a retail dealer are able to purchase coal when general business is slack and coal is plentiful, have it shipped to a team track and hauled direct from the car to the consumer. This means that the retail dealer who maintains a yard and the necessary equipment to do a maximum business loses the tonnage to which he is entitled and should have if he is to maintain his yard and be ready at all times to supply the public.

If this uneconomic practice of shipping cars to public sidings in any community is continued by producing companies and wholesalers, it means that the retail dealer will reduce his equipment and then at the very time everyone wants coal at once, there is no way of supplying the demand,

*Address at the convention of the National Retail Coal Merchants' Association, Richmond, Va., May 12-13-14, 1921.

as the team track hauler, or "snowbird," is not functioning. He hauls coal only when the price is low; in summer weather, when delivery conditions are at their best, and when coal is the easiest to purchase. To compare the service he renders with that rendered by the regular dealer who maintains a yard and is in business twelve months in the year is manifestly unfair.

The Federal Trade Commission is opposed to and will protect business against unfair competition. What can be more unfair than the practice of large manufacturing plants purchasing coal and distributing it at cost to their employees? This practice causes endless dissatisfaction in any community where such a plant is situated. A few consumers receive a rebate at the expense of their neighbors. A few families get a little cheaper coal, while the great majority have to pay more.

Railroads Now Treat All Shippers Alike

It was not many years ago that the railroads gave rebates, but now all shippers, large and small, are treated alike, and unless the producer of coal is willing to adjust some of the present inequalities in the distribution of coal, we can expect nothing but continued criticism.

Operators and wholesalers should discontinue the practice of shipping to any but retail dealers who are in business twelve months in every year and who maintain at all times the facilities for supplying the needs of the community in which they live.

The National Retail Coal Merchants' Association should at all times stand for the most economic method of delivery and a square deal for the public. This public interest would best be served by all coal for domestic consumption in any community being delivered only through retail yards.

Another most unsatisfactory condition from both the retail and consumers' point of view is the matter of price, and this during the past few years certainly has been a just criticism, not so much on account of the increase but rather on account of the great variation in prices. Before the war there was some variation in prices quoted by producing companies, but these small differences averaged up during each coal year, so that in the end the costs were nearly uniform.

This is not the case to-day, as the Fuel Administration fixed a differential of 75c. per ton between certain classes of anthracite operators. This has been continued to the present time to a greater or less degree, with increasing dissatisfaction to retail dealers and consumers. Some way should be found under the law to have as nearly a uniform price as possible. This is the only way that coal can be distributed in a manner that will satisfy the consumer. Each consumer wishes to be assured that the price he pays is no more than that paid by any other consumer for the same quality of coal.

Independents Want Higher Prices at Mines

The so-called independent operators (who do not own any railroads and therefore cannot make a profit out of the freight haul) claim that company or railroad-owned mines do not make a profit on coal mining, but on the freight haul, and for this reason they insist they are entitled to and must have a higher price for coal at the mines. If the contention is true, the matter of freight rates on anthracite should be thoroughly investigated and proper reductions made.

At the same time an investigation of anthracite freight rates is made it would be well to investigate bituminous rates as well, in order to ascertain whether coal is paying a rate out of proportion to other commodities. A further investigation should be made of coal shipments at Tidewater. If it is found, for example, that anthracite is not rescreened and reweighed before being loaded in barges, tariffs should be changed to compel the railroads to perform this service.

Proper publicity should be given the coal business, and this can be accomplished only through joint committees of operators, wholesalers and retailers. The coal business gets plenty of publicity, but the wrong kind. The consumer, through the public press, has been educated to a point where he hardly believes anything good of anyone engaged in the coal business.

This can readily be overcome by sustained joint advertising and giving to the public the unbiased facts. Public opinion, in the long run, is fair, and it is only through lack of foresight and the failure of the trade to use ordinary common sense that we stand where we are today, in the shadow of government interference and control.

There are several bills now pending before Congress which, if passed, will be the entering wedge for eventual absolute control of the coal industry. We do not need more government interference to-day. This country has been successful in the past and has reached the position it now holds through individual unhampered effort, and if left alone, American business men will place this country in the forefront of the commerce of the world.

Let Congress and all the government departments and officials devote all their time to matters of government, and, left alone, our business men will continue to make American business the greatest factor in our economic well-being and the envy of the commercial world. By all means let our government be in position to advise and help at all times, but let it stop there. The ills of the past seven years cannot be cured by more laws. What we need are fewer laws and more sanity in the enforcement of those we now have.

Labor Most Expensive Element of Production

Of all the elements entering into the production and distribution of coal, that of labor is the most important and the greatest single item of expense. In the old days the employer used to come in close contact with his men; he knew them all and could call most of them by name. As business has grown, this personal contact has become less and less, until to-day in a business of any size the "big boss" probably is not even known to most of his employees. Even in a small business, employing, say, less than one hundred men, I venture to say that very few heads of firms know and are known to their men.

This lack of contact has been the principal reason for the labor union and the walking delegate. Your men have had no one before whom they could go for a hearing, so, naturally, they have drifted into the union because they received a sympathetic ear from the union heads and walking delegates. The labor leader's job depends upon agitation and making trouble, so why be surprised at present-day conditions? How many of your men know anything about your business, except what they hear from paid leaders? What can you as an employer expect your men to know of conditions except as they apply to their own locality? What have you attempted in the way of proper education along right lines? How often do you get your men together and talk to them? Have you a committee of your own employees who are privileged to come and discuss their problems at any time with you?

If you have not done any of these things and many others, it is you and you alone who are to blame for the present-day unrest. Remember, the leaders of the union are continually agitating by word of mouth, circulars and pamphlets. Labor to-day is hearing just one side and has been hearing only one side of the question for the past twenty-five years, and the only wonder is that conditions are not worse.

Employers Responsible for Education of Men

Employers in the coal business owe a duty to the public and to posterity and that is to see that their men are educated along right thinking lines. See that they receive pamphlets and circulars of the right kind (the kind that will make them good Americans) as often as they are now getting literature which can only end in anarchy.

Labor also owes something to the employers and to the public, that is, more efficiency, with the consequent increase in production per capita. The many uneconomic restrictions of labor unions must be eliminated at once, the closed shop thrown into the discard and a real day's work given for a day's pay. This is not the time to talk of shorter hours for a day's work, but rather to discuss how much longer we can work. There is continual agitation for a universal eight-hour day, while instead we should be talking of a longer working day. To give continuous employment to all in this country our products must compete in the world's markets, and this cannot be done unless labor is willing to

decrease wages and increase production. The closed shop has never and can never accomplish this.

We have all been neglectful of the two most important elements which alone can assure our economic well-being and our continued success as a nation. These two are our employees and our government. As we are, so they will be. The case is in our hands. If we are of the blood of our ancestors who conquered the wilderness, we will continue to build the nation along the lines of freedom and justice, so that in very truth this will be the Land of Opportunity.

New Frelinghuysen Bill Vests in President Decision to Investigate Coal Costs and Profits

By Paul Wooton
Washington Correspondent

AUTHORITY for the Federal Government to investigate conditions affecting the management, organization and practices of concerns producing or dealing in coal is eliminated from a revised fact-finding bill which has been introduced by Senator Frelinghuysen. The new bill vests in the President any decision to investigate costs and profits. The commercial and business features of fact-finding are to be handled by the Secretary of Commerce and the scientific fact-finding by the Director of the Bureau of Mines.

Both the fact-finding and seasonal coal-rate bills were reported favorably to the Senate on Monday, May 16.

In its revised form the seasonal coal bill reads as follows:

"In order to promote continuous operation of coal mines, steady employment of coal miners and economical use of facilities for distribution of coal, the Interstate Commerce Commission is hereby authorized to initiate, establish, approve or adjust rates for the transportation of coal during specified seasons or periods, which shall be greater or less than the rates for other specified seasons or periods, but which in the judgment of the commission will yield as nearly as may be the same annual revenue for like movement as rates without seasonal variation, to be maintained by carriers, as a whole or as a whole in each of such coal-rate groups or territories as the commission may from time to time designate for that purpose, or by such carrier or carriers as the commission may designate. The term 'coal' shall include anthracite and bituminous coal, lignite, coke, including petroleum coke, and briquets and boulets made from anthracite and bituminous coal and from coke.

Commerce Commission Given Emergency Powers

"Whenever the commission is of opinion that an emergency affecting the transportation of coal and requiring immediate action exists in any section of the country the commission shall have, and is hereby given, authority, either upon complaint or upon its own initiative without complaint, at once if it so orders, without answer or other formal pleading by the interested carrier or carriers, to suspend the operation of any schedule in so far as it affects coal rates, whether seasonal or not, upon filing with such schedule and delivering to the carrier or carriers affected thereby a statement in writing of its reasons for such suspension, and defer the use of such coal rates, and to initiate in lieu thereof such seasonal rates for the transportation of coal as in its judgment the emergency may require. The commission shall thereupon enter upon a hearing concerning the lawfulness of the schedule, the operation of which had been so suspended, and the proceedings thereon shall be the same as nearly as may be as those provided in paragraph (7) of section 15. Nothing contained in this paragraph shall be construed as repealing, modifying, or denying any other authority heretofore conferred upon the commission."

The new fact-finding bill authorizes the Secretary of Commerce to investigate:

(1) The tonnage of coal produced and the tonnage of coal sold, including railway fuel.

(2) The stocks of coal on hand in any section of the country or in such consuming territories or districts as may be outlined or designated by the Secretary and the consumption requirements of any such sections or consuming territories or districts.

(3) The distribution of shipments of coal in commerce to any such section, territory or district, including the distribution of coal cars.

(4) The contract and prevailing market prices received or paid for coal by persons engaged or interested in the mining, sale, storage or distribution of coal.

The Secretary of Commerce is authoribed to require, secure, and collect such information currently or at such time as in his judgment may be necessary in the public interest from all persons engaged or interested in he mining, sale, storage or distribution of coal. The data so obtained shall be limited in its use to the purposes of the act and shall not be used for any other purpose. The provision to investigate conditions of miners is continued.

The new fact-finding bill provides that in the publication of data or in the furnishing of information to boards of mediation there must be no disclosure of individual returns or of any business transaction, trade secrets or names of customers. The provision for an investigation as to the desirability of a zoning system for coal is continued, as is also the provision for investigation as to the purchase of Government coal by one agency, reports to be made to Congress in December next by the Department of Commerce.

Mine Bureau Director Authorized to Investigate

The bill authorizes the Director of the Bureau of Mines to investigate the methods and processes for storage, inspection, sampling, analysis, purchase, classification and economic utilization of coal, and the conduct of experiments and researches to determine the most efficient means for such storage and other processes involved in the preparation, transportation and utilization of coal. In this work the Director shall co-operate with dealers, consumers and others to encourage the construction of facilities for the storage of coal and for its utilization.

The Director is also authorized to investigate as to prescribing standards for various kinds and grades of coal prepared for the market, reporting to Congress with recommendations next December.

The bill requires the Interstate Commerce Commission to co-operate with the Secretary of Commerce in carrying out the act and in promoting the proper distribution and use of coal cars to effect most efficient transportation of coal.

A new section requires that upon the request of the Secretary of Commerce or the Mines Director each operator, dealer or other person, and each person who consumes coal in excess of 100 tons annually and each railroad engaged in transporting coal, shall furnish information as required by the act. The penalties of the former bill, $1,000 fine and six months imprisonment, are continued in the new measure for violation of the law.

Senator Frelinghuysen does not contend that his fact-finding bill should not be simplified further. He was not willing to delay further the appearance of the bill on the calendar, but will offer any amendments which may be agreed upon after the conference which was proposed by the National Coal Association. This conference will be held next week, probably May 24. As time passes the prospect for a large attendance increases. Representatives of large consuming interests are requesting that they be allowed to attend. The Department of Justice, it is understood, intends to have a representative in attendance.

It is understood that the President himself is making a study of the coal situation. A member of the administration who has a position close to the President is authority for the statement that the administration as such has approved no measure before Congress.

Hoover Selects McGraw-Hill Executive to Develop Aids to Business

F. M. FEIKER, vice-president and chairman of the editorial board of the McGraw-Hill Co., has been appointed assistant to the Secretary of Commerce, with duties and relations of greatest significance to the coal industry.

Mr. Hoover has divided the Department of Commerce into two parts. Assistant Secretary Huston will supervise the bureaus relating to navigation and fisheries, while Mr. Hoover will give his personal attention to the bureaus of Foreign and Domestic Commerce, Standards and Census. Mr. Feiker will directly assist Mr. Hoover in the expansion of these bureaus as aids to business.

The first step is finding out what kind of facts and figures industry needs from the Government and then, having organized the department to function according to these requirements, the next step will be to devise an adequate system of clearing the collected data back to business. It

F. M. FEIKER
Assistant to the Secretary of Commerce

will be apparent at once that Mr. Feiker's background of engineering training, viewpoint on the needs of industry and sense of publicity will be of great value to him in the furtherance of Mr. Hoover's plans.

Mr. Feiker is an electrical engineer by profession and has been especially interested in aiding Mr. Hoover in the development of his plan for the elimination of waste in industry which was undertaken by the Federated American Engineering Societies at Mr. Hoover's suggestion. He is a graduate of the Worcester Polytechnic Institute, was for several years chairman of the editorial board of the A. W. Shaw Publications of Chicago, and is now vice-president and chairman of the editorial board of the McGraw-Hill Co. Inc., of New York, publishers of *Coal Age* and other engineering and industrial periodicals. He has been one of the prime movers in the movement to interest engineers in the broad problems of public service, which has resulted in the formation of the Federated American Engineering Societies.

Scranton Coal Company Fined $250,000

FOR damage done to the streets of Scranton in violation of an injunction, Judge Maxey, on May 9, placed damages of $250,642.51 on Frank P. Christian, president; John G. Hayes, general manager and James Pearn, an engineer of the Peoples Coal Co. of Scranton. Judge Maxey declared that "in the case at bar the defendants Christian, Hayes and Pearn were the brains and directing force of the Peoples Coal Co. Only in obedience to their will did the corporation function; its misdeeds resulted from their wilful personal acts. Not to hold them responsible for the violation of the injunction would be a travesty and the court would be left to fulminate against a name only, while the living, breathing actors who really did the acts subversive of the decree would be enabled to flout the principle of justice that those who do wrongs should right them."

The fines were as follows: $211,650 to replace supporting material wrongfully removed, $22,075 to rectify the company's defective columnization of pillars; $9,015.25 to pay city's engineering expense; $6,700 to pay city's counsel expenses; $102.27 to pay expense of printing petition, $1,000 fine for violation of injunction in refusing plaintiff access to mines.

H. C. Frick Coke Co. Also Lowers Wages

AFTER paying for some time a much higher scale than the rest of the operators in the Connellsville region the H. C. Frick Coke Co., a subsidiary of the United States Steel Corporation, on May 12 announced a wage cut to take effect on Monday last, May 16. It will reduce the wages of 25,000 men. The H. C. Frick Coke Co., like all the operators in the Connellsville region, runs non-union mines and can therefore reduce wages without violating contracts. It paid the same wage as other operators in the field till March of this year, when W. J. Rainey Co., Inc., made a wage cut of 18 per cent.

On April 1 the other independent mine operators in the Connellsville region followed suit, but made the cut 22 to 30 per cent. W. J. Rainey Co. at that time made such reductions in its wage rates as would bring its scale to that paid by the independents. For six weeks the H. C. Frick Coke Co. continued to operate without a reduction in wages but at last it has made a radical wage cut. This may result in some uneasiness in the western Pennsylvania and central Pennsylvania union areas, which, having a contract that cannot be abrogated, will suffer severely from competition.

The schedule is in brief as follows:

	May 16, 1921	Before Reduction	Nov. 10, 1917
Outside laborers (9 hr.)	$3.30	$5.40	$3.30
Tracklayers, per day	5.55	7.55	5.05
Assistant tracklayers, per day	4.75	6.75	4.35
Mine laborers, per day	4.55	6.55	4.15
Firebosses, per day	7.00	8.80	6.00
Pick miners, per 100 bu.	2.65	3.24	2.29
Coal loaders, per 100 bu.	1.65	2.10	1.65
Hand drawers, per 100 bu. charged	1.51	2.60	1.44

The wage cut approximates 30 per cent and differs somewhat from the scale put into effect April 1 by the independent operators who adopted the November, 1917, scale. The Frick scale, however, includes portions of the November, 1917, scale, and that of December, 1919. The independents usually follow the H. C. Frick Coke Co. in the wage changes, but it may be doubted whether they will raise the pick-mining rate from $2.29 to $2.65 in face of declining wages.

Shipments of Anthracite 229,694 Tons Greater in April Than in March

SHIPMENTS of anthracite in April, as reported to the Anthracite Bureau of Information in Philadelphia, amounted to 5,967,465 gross tons, an increase over the preceding month of March of 229,694 gross tons and 1,153,254 gross tons greater than the tonnage shipped during the month of April last year, when the switchmen's strike interfered with traffic.

Shipments in gross tons by originating carriers were:

	April, 1921	March, 1921
Philadelphia & Reading	1,123,585	1,018,858
Lehigh Valley	1,102,965	1,022,714
Jersey Central	537,822	540,556
Lackawanna	929,271	1,020,381
Delaware & Hudson	812,967	837,644
Pennsylvania	416,847	333,687
Erie	630,471	561,013
New York, Ontario & Western	128,684	144,930
Lehigh & New England	284,853	257,988
Totals	5,967,465	5,737,77

Retail Coal Merchants, in Annual Convention at Richmond, Discuss Problems of the Industry

RETAIL coal merchants, meeting in annual convention at Richmond, Va., last week, had a taste of true Southern hospitality. Delegates from all over the country, many of whom had stopped at Cincinnati for a jollification with the local brethren there, and had then visited the Pocahontas coal field, gathered for the opening session of the fourth annual convention of the National Retail Coal Merchants Association in the Hotel Jefferson, Richmond, Va., on Thursday, May 12. John E. Lloyd, retiring president of the association, made the best address he has delivered in the three years he has held this office.

The visitors were welcomed to the city by W. H. Swarzchild, president of the State Retail Merchants Association. He commented on the fact that it is very difficult for business men to understand why coal is the one commodity that does not come down in price, a point that seems to be perplexing many. When on Friday morning one of the local Richmond papers carried a story on the convention to the effect that coal prices are coming down, Mr. Lloyd invited the reporters to hear him say that, on the contrary, prices are going up. Needless to say, evening papers of that day spread this word also.

Samuel B. Crowell, treasurer of the association, reported all debts paid and a comfortable balance of $10,000 on hand. Ellery Gordon, secretary-manager, in his report of the activities of the year, stressed the hearty co-operation of the officers and paid tribute to the retiring president.

Indianapolis Merchandising Plan Interests

A feature of the first day's program was the description by John George, of Indianapolis, of the plan of merchandising coal used by the Commercial Credit, Audit and Correct Weights Bureau, conducted by retailers in that city. This bureau, numbering but sixty members out of more than two hundred coal retailers in the city, collects 5c. a ton on coal handled, and raised $42,000 in 1920. The bureau is in essence an open-price association.

A. H. Schoyer, manager of through traffic on the Pennsylvania Railroad, read a paper on the financial condition of the railroads.

Thursday afternoon and evening several hundred of the visitors were taken on a boat ride on the James River.

Friday morning Mr. Lloyd told of the efforts made during the past year to effect closer relationship between the producers, wholesalers and retailers. He hoped that another year would see the anthracite operators meeting with those who gathered together last year.

New directors elected were John E. Lloyd, Philadelphia; Wallace B. Phinney, Boston; James Tattersall, Trenton; William Bartrine, Kansas; Charles E. Dodge, Monroe, Wis.; Ben Steers, Kalamazoo, Mich.; W. W. Griffith, Washington, D. C.; J. L. Browne, Sioux City, Iowa; Mr. Downard, Louisville; Peter Beck, Harvey, Ill., and James Commings, of New Jersey.

In the absence of E. J. McVann, the scheduled speaker for Friday morning, who because of illness was unable to be present, Mr. Lloyd turned the meeting over to discussion, the subjects including a symposium on "Is the coal trade doing its best to sell small sizes of anthracite, to give standard preparation, to overcome the seasonal character of coal demand in buy-early advertising and otherwise, and to set up a reputation for clean, straightforward business ethics?"

Government regulation as a cure for coal troubles was severely condemned, particularly after a member from Indiana had told of experiences with state control in 1920. W. J. Womer closed the discussion on seasonal freight rates by saying that the transportation committee of the association was on record in favor of such a scheme.

The banquet Thursday evening was one of the most enjoyable features of the meeting, by some thought to be the most instructive in the eloquent addresses of Representative Campbell of Kansas and Senator Reed of Missouri. Retiring President Lloyd introduced as toastmaster of the occasion Mr. Walker C. Cottrell, who in short but felicitous remarks introduced the speakers, both of whom spoke much to the same point, taking for their topic the present dangerous tendency of the Government to get away from the faith of our forefathers and from our organic law, the Constitution of the United States. Mr. Campbell started off with the statement that the world was never confronted with such problems as it is today, the nerves of all the civilized nations being unstrung; in this country it was shown in the tendency toward socialism, largely in the way of permitting the Government instead of the people to cure the ills from which we are suffering.

Government Regulation Rampant in Washington

There were, he said, more than 300 bureaus and commissions in Washington regulating different things, and as many as twenty-five doing the same thing—statesmen surrendering their states' rights for government appropriations—selling their birthrights for a mess of government pottage. It had grown to such an extent that at the last session the Senate had passed a bill to send midwives to every expectant home, and unless the thinking intelligent people called a halt this country would go upon the rocks. He begged eloquently for the return to Jefferson democracy and to the limiting of government to its proper function of guaranteeing to the people life, liberty, prosperity and the pursuit of happiness.

Mr. Cottrell in introducing Senator Reed said that he (Cottrell) was in a dangerous position sitting between Reed (Dem.) and Campbell (Rep.), but he wanted to assure both the Democratic and Republican parties that what the people wanted were fewer bureaus and more sideboards, a sentiment that met with the cordial approval of the audience.

Senator Reed followed much the same lines laid down by Mr. Campbell and confirmed his statement about the growth of socialism, which he said is threatening the foundations of our Government. Much of the trouble, he said, was due to the growing tendency, when any trouble arose, to ask why Congress does not do something about it. He decried the tendency of endeavoring to have even human ills rectified by legislative enactment. One of the most telling parts of Senator Reed's remarks was his reference to some recent decisions of the Supreme Court, which he said had in effect nullified the Constitution of the United States. He said with regret that his respect for the Court had been shattered when the Court had held that any business was of public welfare and that Congress could legislate for its regulation. In this, he said, the coal men were interested, for if Congress should declare that coal was charged with public use and proceed to legislate accordingly the courts would uphold it.

Notes a Drift Toward Socialism

It is high time, the Senator urged, for men who love their country to create a sentiment that business should not be charged with public use. This he said had special reference to the coal men, for coal would be the first line of attack, and if coal is so charged why not everything else in turn—wheat, bread, lumber—every commodity that the public needs? The Senator held that a fatal step had been taken when the Government had gone beyond the highways in its efforts at conducting and regulating business. To proceed on the present line can only mean the establishment of a socialistic order on the ruins of this Republic. He cited the packers' bill and the several bills introduced for the purpose of regulating the coal business supported by seductive arguments from the propagandists that coal was a great fundamental essential for all the people and that the Government should regulate it. Such action, he said, would be to set fire to the dry grass of public opinion.

The Senator ridiculed in most eloquent terms the reform-

ers who presume to know much better how every other business than their own can be conducted, and held that regulation by such reformers in the Government was to substitute the incompetence of government for the efficiency of proprietorship. Such ideas had their inception in the ancient theory that "the king can do no wrong." He told how hopeless it was for members of Congress, men who could not know the details of business upon which they were called upon to legislate, to undertake to do so, and the only result must be chaos. He directed his shafts at the manner of rendering departmental decisions where opinions were proposed by subordinates who could not earn $100 a month in the industry upon which the report was made. And the decisions received the approval of the department heads.

The Fuel Administration was cited as an instance where in shutting down industries, whether provided with coal or not, the Administrator "had forgotten the parable of the foolish virgin." Every man should be permitted to run his own business but not to the injury of others. He drew a comparison between the conditions in Europe and in this country and ended with a patriotic peroration that brought the audience to its feet. He was given an unusual ovation for an after-dinner speaker.

Successor to John E. Lloyd Chosen

Following Senator Reed's address the toastmaster announced the result of the elections, which were: For President, Roderick Stephens, New York; First Vice President, Homer D. Jones, of Chicago; Vice Presidents, W. T. C. Beslin of Memphis, T. Percy Bryan of Kansas City, Wallace B. Phinney of Boston, Peter Beck of Harvey, Ill.; Treasurer, Samuel B. Crowell, of Philadelphia.

An appropriate event prepared for the closing of the evening's festivities, the presentation to the retiring president, John E. Lloyd, of a silver after-dinner coffee set, was marred by the failure of the gift to arrive on time, though shipped from Philadelphia five days before.

The feature of the Saturday morning session, after the reports of the committees on cost accounting and resizing had been received, was an address by S. D. Warriner, president of the Lehigh Coal & Navigation Co.

Mr. Warriner began by referring to the changes in sentiment regarding the conduct of business since the world war catastrophe, and particularly the rise in prices and wages after the war had been brought to an end. We were now at the turn but the problems of deflation were of a more serious character than the problems of rising prices, and it was no wonder that business men and the public were more or less confused. We, on this side of the ocean, have echoes of the world-wide socialistic movement. It is as near to us as England, which is now in the throes of labor strikes, and no one can foretell the end. We know that a revolution has been narrowly escaped.

Taxing the Public to Meet Labor's Demands

The problem of the open shop and the closed shop has been passed up, and the old theory that the laborer is worthy of his hire has given way to a new theory that the public must be taxed to give labor the wage that it demands. The echo is heard in this country by two industries, the railways and coal. It will be a great political issue backed by strongly-entrenched unions. We are confronted with the question shall these issues be between man and man or by government intermediaries? Mr. Warriner then spoke of the difference between the problems confronting the bituminous operators with a capacity production of more than 700,000,000 tons a year, a normal production of 500,000,000 tons, and a present rate of production, due to lack of demand, of 350,000,000 tons, and of anthracite which is running practically to full capacity, and with the domestic production moving partly to market, partly to storage yards and partly to dealers.

He deprecated the agitation about a shortage of anthracite this year, but said he realized, as do all anthracite producers, that buying must to a certain extent be limited, as large numbers of consumers have not the money to make advance purchases at prevailing prices. Then, too, higher costs of production and of transportation have restricted the markets for anthracite to a smaller area. He also deprecated the present-day tendency to a lack of ethics in business, particularly as related to the sanctity of contracts. The wages of anthracite mine workers, which represented 70 per cent of the cost of anthracite production, were written into a contract fixed by a commission appointed by the President. That contract establishes a labor cost increase of 138.6 per cent over the pre-war period. It was fixed at the time, in 1920, when the cost of living was at its peak. Notwithstanding the award and the contract the miners struck in September. The troubles were really ended in December, the miners insisting on certain modifications which the operators would not consider. In this stand the operators were supported by the public and the press.

Now, however, the operators are being urged, not by the radical press but by the conservative newspapers, to break that contract. This the operators positively will not do. The contract expires March 31, 1922, and it will stand until that date, even if the cost of living has fallen from 115 per cent above pre-war times to 40 per cent above. The operators must meet the situation by furnishing accurate statements of the condition of the industry. It is faced with the competition of other fuels, now all the keener because of its high price. The margin to the operators is small—always has been small—but must be sufficient to enable the operations to continue. He told of the new acts of the Pennsylvania Legislature; one already a law imposes 1½ per cent tax on the value of anthracite at the mine and if the others are also put into effect the total tax will be 3½ per cent on the total production, or 5 per cent on the domestic sizes.

He asked for harmony in the different branches of the trade, saying that the dealers were not the customers but the partners of the anthracite operators in providing service to the public. The industry cannot function properly unless harmony exists among those engaged in it, and the dealers should meet the operators half way in attaining efficiency of service.

Coal Wholesalers to Consider Future of the Market, Traffic and Legislation

THE two Cobbs—Irvin and Ty—are to be the headliners at the banquet which will close the fifth annual convention of the American Wholesale Coal Association. Three main topics will be discussed at the business sessions of the convention, which will be held June 7 and 8 in Washington. These topics, with their subdivisions are:

The Near Future of the Coal Market.
- (1) The situation as a whole.
- (2) The anthracite situation.
- (3) Eastern coal and exports.
- (4) Middle West and Lake coal.

Traffic.
- (1) Address reviewing the situation from the standpoint of the railroads, the government and the shippers.
- (2) Address outlining methods to meet the wholesalers' traffic problems.
- (3) Report of the Traffic Committee.

Legislation.
- (1) Address by C. C. Carlin in which he will discuss the prospects for coal legislation.
- (2) Report of the Committee on Legislation.
- (3) Determination of the future legislative policy of the association.

THE INTERSTATE COMMERCE COMMISSION has suspended until Sept. 3 rules governing interchange switching at Atlanta. The proposed designated point of interchange at Atlanta between the Southern Ry. and the Louisville & Nashville R.R. is Decatur St., and industries more than three miles distant would be assessed a switching charge of 1.5c. per 100 pounds, whereas the present charge on coal is $2.50 a car.

SEALED PROPOSALS WILL BE OPENED by the Superintendent of Lighthouses, Tomkinsville, N. Y., 3 p.m., May 19, 1921, for 500 tons pea coal delivered in a barge alongside dock at Lighthouse Depot, Tompkinsville, N. Y. Information on application.

Transport and Railroad Men in Britain More Active in Mine Workers' Aid

ANOTHER week of agonizing suspense in Great Britain has not, apparently, brought matters any nearer a settlement. The strike is about to enter its eighth week, and yet up until Tuesday, at least, no conferences between mine workers and operators had been held. The Government seems to be hopeful because it hears more of wages and less of pooling. It is beginning to believe that the mine workers are tiring of their political aims and are simplifying matters by desiring a satisfactory solution of only the wage question.

Miners at one Lancashire pit have asked the Miners' Federation to accept the Government's terms. With the solidarity now existing in mine labor this seems to suggest that a considerable unexpressed sentiment exists in favor of this compromise. It appears that the great resistive powers of the mine workers of Great Britain arise from the fact that the men are being befriended by those large co-operative stores for laboring men which have grown up as the outcome of the celebrated Rochdale experiment.

An untoward development is the action of the transport men. The Government long ago received promises from the executives of these laborers and of the railway men that they would not hinder the unloading and shipment of coal for public utilities. While the coal at the ports was from British collieries, mined by British workmen at prewar wages and under Government control no great trouble existed as to the unloading. It was grudgingly performed, but soon it was foreign and even German coal that approached the wharves, and the feeling on the part of the transport men was increasingly hostile and was fanned not only by class consciousness but even by a spurious patriotism.

Railway and Transport Men Handle Import Coal

As Irish sentiment is not believed likely to affect the settlement of the strike the Irish and English railway men and transport workers on May 8 decided to permit the handling of foreign coal intended for Irish purposes only and shipped to Irish ports. Belgian coal at Dublin was the cause of this decision, but it is understood that several shipments from America are on their way to the ports of Ireland.

Trouble arose, however when German coal made its appearance at the port of London. The transport workers refused to handle it and a number of them were discharged. About this same time came the trouble near Glasgow. Here the pointsmen (switchmen) refused to provide for the transportation of coal that non-union men had unloaded. The Government, which still controls the railroads, ordered the Caledonia Ry. "to carry out its duties." Bob Williams, secretary of the transport workers, with Charles Crump of the railway union had a conversation with Sir Eric Geddes, Minister of Transportation, and demanded that the transport workers be not discharged summarily for handling non-union coal. It seems that conditions are made worse rather than better with the departure of the somewhat conservative J. H. Thomas, secretary of the National Union of Railway Men, to the United States.

Sessions of the executives of the transport workers and the railway men developed that Bob Williams wanted a strike for the reinstatement of the Londoners who had refused to unload German coal. The leader of the railroad men, however, was opposed to any such action. On May 13 the railway men determined through their executive to put an embargo on coal loaded by non-union labor. The firemen's and enginemen's union had previously declined to transport non-union or foreign coal and had promised to give those who were discharged for that reason full pay till reinstatement. This union also called the attention of the Dutch and French transport workers to the resolution of the International Transport Federation at its Geneva congress, which imposed a blockade on coal for England. As a result four hundred thousand tons at Antwerp were tied up, the Dockworkers' Union refusing to handle it, as it was destined for Great Britain. In Glasgow, where men had been laid off, an independent rail strike was declared to take effect on the evening of May 13.

About 7,000 tons of American coal is lying somewhere on the British railroads. It came in at the harbor at Portland and was unloaded by union labor, but the railway men refused to handle it. More than five million men are idle, some striking and some because the lack of coal has closed the factories.

At the big Greenwich power plant of the London County Council most of the members of the General Workers Council are on strike because they heard that coal from Belgium was being used. The Government supplied non-union workers in their places.

Reconsignment Charge Remains $7 Per Car

RECONSIGNING rules on coal and coke were considered in Pittsburgh on May 5. On the railroad side, the representatives were the coal and coke committees of the Trunk Line and the Central Freight associations. On the coal side were the National Coal Association, American Wholesale Coal Association, the Chicago Wholesale Coal Shippers Association, the Pittsburgh Wholesale Coal Association and the National Industrial Traffic League. In addition, several coal associations were heard from by letter.

The hearing was a continuation of that which was held on March 9 at Pittsburgh, when certain revisions of the reconsigning rules were proposed. The railroads at that time had received various recommendations, but could not go quite as far as the various groups had then proposed. The hearing was on the proposed increase in the reconsigning charge from $7 to $10 per car.

The presentation of the coal side of the case was brief and to the point. The burden of the whole story was that the coal trade was willing "to go along with" the railroads in all matters pertaining to their revenue, but could not consent to make those concessions which would ruin the coal trade itself.

The statement made by the jobbers was, perhaps, typical of the lot—although maybe a little more highly colored than the rest. It was said that there was no present disposition on the part of the wholesalers to question the power of the railroad to put these rates and charges into effect. The new charges would have amounted to 21c. or 22c. per ton. On the contrary the gross margin of the wholesaler is, in these tight times, not more than 15c. per ton.

At the conclusion of the presentation of the coal case Chairman Venning announced that the railroad men would retire and would reach a decision at once. In less than five minutes the railroad men were back in the room and Chairman Venning announced that the charges would be $7 a car, but the rules otherwise would remain as proposed.

Central Pennsylvania Coal Producers' Association Seeks Wage Conference

ACCORDING to John L. Lewis, president of the United Mine Workers of America, the Central Pennsylvania Coal Producers' Association is seeking a conference with the union to consider the "grave situation" in the coal industry and wage reductions. This association may be granted the courtesy of a conference, but Lewis declares that there will be no concession.

The union is not proving to the advantage of the mine workers, who note that the Connellsville region is working more steadily than it would if its wages had been maintained and that the central Pennsylvania district is working less steadily than is its due. About 115 coal-producing concerns, employing nearly 100,000 mine workers, will be represented at this conference if it is held.

In the organized districts of Tennessee several thousand mine workers are on strike or locked out because of the wage question, according to Mr. Lewis. The Washington mine workers also are on strike against wage reduction. "There is much rumbling beneath the surface," declared the same authority, "but thus far the operators' associations have not generally attempted to abrogate their agreements, which run to March 31, 1922."

Strikers Put Mine Towns Under Rifle Fire

MERRIMAC, Rawl, Sprigg and Matewan, W. Va., and McCarr, Ky., have been subjected to drum fire, which has now become the accepted manner by which union men enforce their labor demands in the Mountain State. The fusillade started shortly after dawn May 12 at Merrimac, which is about four miles up the Tug River from Williamson. Governor Morgan has asked for Federal troops and has ordered the entire state police force to the scene of the disorder. H. C. Staton, a state prohibition officer and merchant at Sprigg, was killed by one of the bullets, and Noah Phillips and a young man named Calvert, who were employees of the White Star Coal Co. at Merrimac, were seriously wounded.

The towns molested lie within seven miles of one another along the banks of the Tug River, where foliage and boulders furnish a perfect screen for the riflemen. The shots rained all over and around a passenger train at Sprigg as it entered the station, but, fortunately, no one was killed.

Firing on the villages persisted through the night of May 12, and the men, women and children left their homes either for the hills or to more remote districts. On May 13 Gates, near Matewan, and the mines of the New Howard Coal Co., became involved. Dan Witt, a non-union miner, who, with several mine workers' families, was penned in a mine, left it to obtain water and was shot. G. W. Smith was added to those known to be killed.

On May 14 Blackberry City, New Howard and Allburn were added to the beleaguered towns, and the shots had severed all the electric wires and left the villages in darkness. On May 15 the shooting had quieted. It lasted at Merrimac on that day only thirty minutes. So far the only forces used to restore order have been the sheriff's deputies, the state police and troops of the State of Kentucky.

Major General George W. Reed, commanding the Fifth Corps Area, has been making an investigation, but the Federal authorities have remained almost indifferent and on May 16 decided to do nothing. The action of Secretary of War Weeks compares unfavorably with the prompt action during the previous Administration. Things have quieted down, it is true, but the villages are depopulated and no one dares to return. Reports as to the number of killed vary from six to fifteen. The trouble appears to have had its immediate source in the eviction of 100 mine workers from company houses. Apparently non-union men are engaged in the shooting, for Sprigg is a tent colony of strikers. It is reported that an automatic rifle, three other rifles and 1,000 rounds of ammunition were found at Sprigg, wrapped in Charleston, W. Va., papers of Saturday and evidently thrown from a train.

New Tariff Bill Will Tax Coal Imports; Washington Operators Suggest 75c. Ton

BITUMINOUS coal probably will be made dutiable in the forthcoming tariff bill. For the past eight years it has been on the free list. It is understood that the sub-committee of the Committee on Ways and Means of the House of Representatives already has agreed that it is to be dutiable. Coal operators in the State of Washington have asked that the duty be 75c. a ton. It is not known what rate the sub-committee has in mind. Under the Payne-Aldrich tariff the duty on coal was 45c. per ton.

A tariff is being urged largely for the purpose of protecting the domestic industry in Washington from competition by Canadian coal, but coal is reaching Pacific ports from both Japan and Australia. Incidentally Canada collects a duty of 53c. a ton on coal sent in to that country.

It is expected that the full Ways and Means Committee will interpose no objection to a reasonable duty on coal. So far as can be learned, there will be no determined objection either in the House or in the Senate to this duty. Eastern coal operators have advised the sub-committee that there is no objection on their part to the placing of a duty on coal.

Under existing conditions producers of coal in British Columbia and in Alberta enjoy a considerable advantage over producers in the State of Washington. This is particularly true of the mines on Vancouver Island. These properties are on tidewater and employ a considerable amount of Oriental labor. Wages in Washington mines are fully $2 a day higher on the average than are those paid on Vancouver Island. Higher wages are paid at the mines in eastern British Columbia but even there they are 50c. per day lower than those paid in Washington. The great advantage enjoyed by the British Columbian coals, however, arises from the fact that fully 60 per cent of the output consists of the larger sizes. In Washington only about 30 per cent of the coal is recovered in the large sizes. In addition the rate of exchange favors the Canadian operator.

Rail Surplus of $30,894,065 in March Is $50,000,000 Less Than Intended by Law

NET railroad operating income for March was $30,894,065, according to a tabulation prepared by the Association of Railway Executives from reports made to the Interstate Commerce Commission. This represents a return of 2.29 per cent of the tentative valuation fixed under the Transportation Act and a shortage of $50,000,000 from the net revenue contemplated by that act, the association announced in a statement issued May 12.

The March reports showed a surplus for the first time since last December, a deficit of more than $950,000 being returned in January and of $7,378,000 in February, according to the association figures. The improvement, the statement said, "was due principally to a marked reduction in the cost of operation caused by the institution of various economies and a reduction by many roads in the number of employes." Increased traffic also influenced the month's results.

Operating revenues in March were announced as $458,361,526, a decrease of 2-10 of one per cent from the corresponding month of last year and operating expenses as $399,429,447, a decrease of 4.8 per cent. The net operating income was an increase of 104.6 per cent over March, 1920.

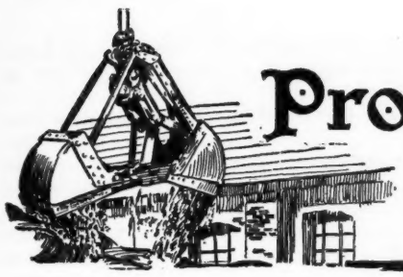
The Western district carriers came nearest to earning a return of 6 per cent in March. Their compiled reports showed net earnings of 2.66 per cent. The Southern district returned 2.27 per cent net and the Eastern district 1.91.

IT IS UNDERSTOOD in Washington that Senator Calder, of New York, is preparing to re-introduce a coal regulation bill. The Senator is reported to be opposed to a Federal Coal Commissioner bill. Report has it that Mr. Calder has submitted to various coal interests a tentative draft of a new bill, but when seen the Senator declined to discuss the subject.

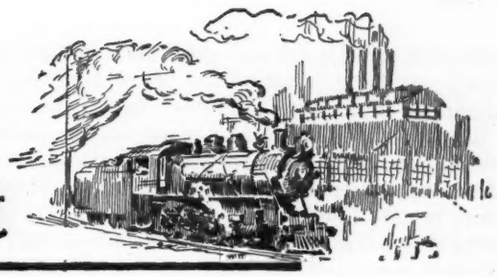
THE COMMITTEE OF BUSINESS MEN which recently conferred with Secretary of Commerce Hoover on plans for reorganizing the department in the interest of trade and industry, have recommended that the Commerce Department include all of the non-regulatory functions of other government institutions having to do with industry. The committee favored the centralization of statistics on industries in the department.

SECRETARY OF COMMERCE HOOVER is understood to feel that the determination of cost of producing coal at the mines is not an essential factor in consideration of coal prices. He takes the ground that costs vary at different mines and a basic determination of costs is not possible in view of these varying conditions, and would not be of benefit to the public. This is an important announcement in view of the controversy which has raged around cost determination, and is expected to play an important part in coal matters in view of the fact that the Commerce Department is now favored by some Senators for administration of the proposed coal act.

THE GOVERNMENT HAS BEEN ALLLOWED ten days' additional time in which to file its brief with the Supreme Court of the District of Columbia in the matter of the National Coal Association's injunction. This serves to extend the life of the temporary injunction for at least the same length of time.



Production and the Market



Weekly Review

DESPITE the slow but steady gains in production of bituminous coal, there is little optimism in the trade. The present gains are attributable to two factors—sustained demand in the West and Middle West for domestic lump and increasing call for foreign bunker coal and exports offshore. Buying for Lake shipment is inactive and the large shipments are almost entirely on the account of shippers with their own docks. Industrial activity and a market for steam coal, the backbone of the bituminous coal trade, is lacking, and the two largest consumers of soft coal, the railroads and the steel industry, are not in the market for more than their current needs, which are much below normal.

As was to be expected, retail coal merchants are proving to be more intelligent buyers than are large consumers, for they are buying both soft and hard coal to the limit of their yard capacity while prices are easy. Coal-burning weather still prevails throughout much of the country and this has helped move both anthracite and bituminous coal to the householders' cellars. This cannot last much longer and the easing up in lump coal prices is already in evidence in a few spots.

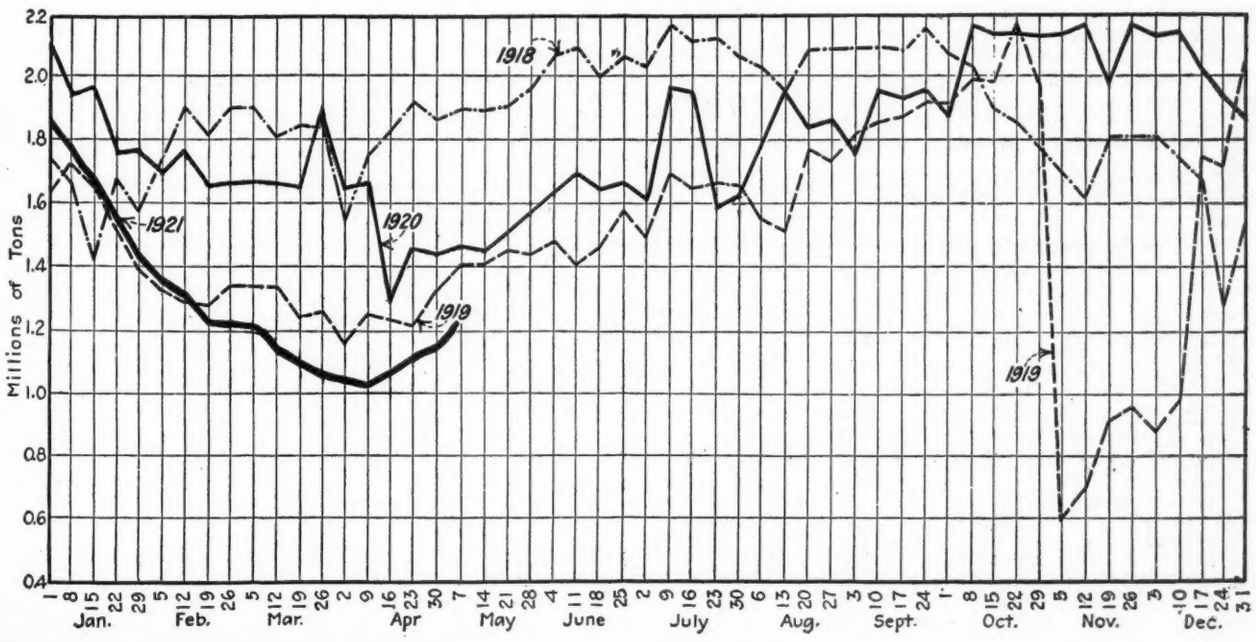
Steam coal resulting from screening out domestic lump has gone begging on the market both East and West and the general level of prices has suffered as a result, *Coal Age* Index for the week showing a drop to 103 from 104 last week. Aside from export demand there is nothing in sight promising continued strength to the market. Briefly, prices at Tide are tending upward, in the Middle West and in New England downward, in the Far West they are stationary and in the Southwest prices are strong, with household coal tending upward.

British Strike Affects Foreign Demand

Foreign demand for coal is gaining, after six weeks of the British strike. The demand so far evidenced is for bunker coal, either for loading at our ports or for shipment as export cargo for bunker supplies at foreign stations, as Gibraltar. No appreciable call is yet recorded for industrial coal in foreign countries that can be traced to shortages arising from non-delivery of British coal. It may be six months before the full effect of the loss in foreign markets of around 10,000,000 tons of coal (if the strike is over by the end of May) will be felt in this country. The seamen's strike on this side has not so far seriously interfered with coal shipments.

A million tons of coal standing in cars at Lower Lake ports awaiting boats to carry it to the Northwest would not ordinarily be considered such a large accumulation,

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

but with so little ore and grain coming down and so few boats available, what would be normally but a week's dumping is becoming a matter for serious consideration.

Anthracite is moving in good volume, mainly to the West, up Lakes and to New England. The Middle Atlantic section could not have one-twelfth its annual requirement now if it were to demand it, because shippers are pushing so much of this current output to more distant markets. Philadelphia dealers have been "rationed" already.

Coke output reflects the situation in iron and steel. So low is the production of beehive that it is doubtful if any is going to iron furnaces.

BITUMINOUS

Gain in production of soft coal continued during the first week in May. According to the Geological Survey the week's output was 7,296,000 net tons, an increase of 5 per cent, or 326,000 tons, as compared with the preceding week. Loadings on Monday and Tuesday, May 9 and 10, were 10 per cent greater than for the corresponding days of either of the two preceding weeks.

As already stated, production in the Middle West is stimulated by the domestic call, which is causing an overproduction of coal. Those fields supplying the Lake trade have increased the amount of coal mined. In the eastern Ohio district production for the week ended May 7 was the heaviest of any period since January, industrial demand also being a trifle stronger. The Northern and Middle Appalachian output was 4,093,000 tons for the last week in April, continuing the gradual increase made since the first of that month.

Tidewater shipments increased during April, the total being 3,041,000 net tons, according to the Geological Survey. This was 213,000 more than for March and the heaviest dumped since January. Increased foreign demand caused by the British strike and a heavier call for bunkers were the main causes for the increase, although coastwise movement to New England jumped to 633,000 tons from the March figure of 518,000. March and April comparison of Tidewater dumpings follows:

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR APRIL 1921, COMPARED WITH MARCH, IN THOUSANDS OF NET TONS

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	April Total	Mar. Total
Coastwise to New England	112	26	87	408	..	633	518
Exports	...	54	116	640	15	825	712
Bunker	381	53	51	319	1	805	626
Inside Capes	...	142	101	17	1	261	235
Other tonnage	484	1	1	27	4	517	611
April total	977	276	356	1,411	21	3,041	.....
March total	1,065	298	316	1,099	50	.....	2,828

During the week ended May 7 export dumpings were 226,159 net tons at the Hampton Roads piers, or a decline of 4,554 tons from the preceding week. Bunker coal, on the other hand, increased 44,254 tons, or 47 per cent, the week's figure being 135,710 tons. The seamen's strike is delaying somewhat the movement at Tide—at this writing there are several ships in the harbor unable to proceed because of the lack of crews. Prices have strengthened a trifle;

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Mar. 1920	Apr.19 1921	May 10 1921	May 17 1921†
Low-Volatile, Eastern					
Pocahontas mine run	Columbus	$2.35	$3 25	$3.50	**$3.50@$3.75**
Pocahontas lump	Columbus	2.60	5.50	5.40	**5.50@ 5.75**
Pocahontas mine run	Chicago	2.35	4.00	4.00	3.50@ 4.50
Pocahontas lump	Chicago	2.60	5.00	5.00	**5.00@ 5.50**
*Smokeless mine run	Boston	....	5.85	6.15	**6.25@ 6.50**
Clearfield mine run	Boston	2.95	2.35	2.35	**2.00@ 2.85**
Somerset mine run	Boston	2.95	3.05	2.95	*2.25@ 3.50*
Pool 1 (Navy Standard)	New York	2.95	3.50	3.65	*3.00@ 3.75*
Pool 1 (Navy Standard)	Philadelphia	2.95	3.50	3.25	3.25
Pool 1 (Navy Standard)	Baltimore	2.95	3.25	3.25	**3.25@ 3.30**
Pool 9 (Super. Low Vol.)	New York	2.95	2.80	2.90	*2.60@ 3.00*
Pool 9 (Super. Low Vol.)	Philadelphia	2.95	3.00	2.90	2.90
Pool 9 (Super. Low Vol.)	Baltimore	2.95	3.05	3.10	*2.95@ 3.00*
Pool 10 (H. Gr. Low Vol)	New York	2.95	2.55	2.45	**2.35@ 2.75**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.95	2.80	2.70	2.70
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.95	2.50	2.55	2.50@ 2.60
Pool 11 (Low Volatile)	New York	2.95	2.15	2.15	2.00@ 2.25
Pool 11 (Low Volatile)	Philadelphia	2.95	2.30	2.45	2.45
Pool 11 (Low Volatile)	Baltimore	2.95	2.25	2.30	2.25@ 2.35
Pool 71 (Navy Sup'mnty)	New York	2.95	2.95	3.00	2.75@ 3.25
Pool 71 (Navy Sup'mnty)	Philadelphia	2.95	3.25	3.00	3.00
Pool 71 (Navy Sup'mnty)	Baltimore	2.95	3.10	3.10	**3.10@ 3.30**
High-Volatile, Eastern					
Pool 34 (54-64) (H. Vol. Gas and Steam)	New York	2.50	1.95	2.00	1.85@ 2.15
Pool 34 (54-64) (H. Vol, Gas and Steam)	Philadelphia	2.50	[1.95	2.10	2.00@ 2.15
Pool 34 (54-64) (H. Volt Gas and S'eam)	Baltimore	2.50	2.05	2.10	*1.75@ 2.00*
Pittsburgh mine run	Pittsburgh	2.35	2.25	2.10	2.00@ 2.20
Pittsburgh sc'd gas	Pittsburgh	$2.35	$2.85	$2.60	**$2.50@$2.90**
Kanawha mine run	Columbus	2.70	2.00	2.25	**2.25@ 2.35**
Kanawha lump	Columbus	2.95	3.25	3.50	*3.25@ 3.50*
Hocking mine run	Columbus	2.50	2.15	2.20	2.10@ 2.25
Hocking lump	Columbus	2.75	3.25	3.25	**3.25@ 3.25**
Pitts. No. 8 mine run	Cleveland	2.35	2.25	2.20	**2.25@ 2.30**
Pitts. No. 8 lump	Cleveland	2.60	3.65	3.25	*3.00@ 3.50*
Midwest					
Franklin, Ill., mine run	Chicago	2.35	3.40	3.40	*3.00@ 3.50*
Franklin, Ill., lump	Chicago	2.55	3.55	3.75	*3.50@ 3.85*
Central Ill., mine run	Chicago	2.35	2.50	2.95	*2.25@ 3.00*
Central Ill., lump	Chicago	2.55	3.00	3.25	3.00@ 3.50
Ind. 4th Vein mine run	Chicago	2.35	2.75	3.40	*2.75@ 3.50*
Ind. 4th Vein lump	Chicago	2.55	3.25	3.50	3.25@ 3.75
Ind. 5th Vein mine run	Chicago	2.35	2.75	2.70	*2.25@ 2.75*
Ind. 5th Vein lump	Chicago	2.55	3.00	3.25	3.15@ 3.40
Standard mine run	St. Louis	2.35	1.95	1.90	1.90
Standard lump	St. Louis	2.55	2.25	2.40	**2.25@ 2.75**
West Ky. mine run	Louisville	2.35	2.25	2.00	2.00
West Ky. lump	Louisville	2.60	3.00	2.75	*2.65*
South and Southwest					
Big Seam mine run	Birmingham	2.45	3.05	2.95	2.85@ 3.10
Big Seam lump	Birmingham	2.75	3.60	3.70	3.40@ 4.00
S.E. Ky. mine run	Louisville	3.00	2.75	2.60	2.50@ 2.75
S.E. Ky. lump	Louisville	3.25	3.75	3.90	*3.50@ 4.00*
Kansas mine run	Kansas City	3.50	4.40	4.40	4.25@ 4.50
Kansas lump	Kansas City	4.00	5.00	5.00	5.00

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

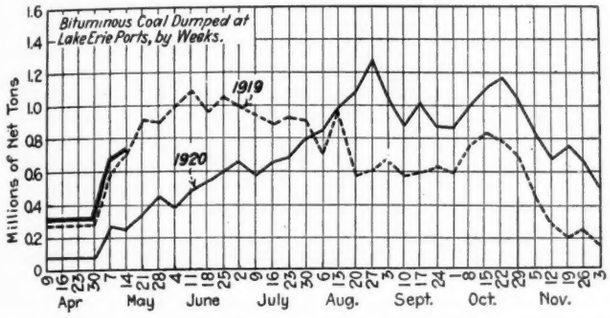
Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	May 3, 1921 Independent	May 3, 1921 Company	May 10, 1921 Independent	May 10, 1921 Company	May 17, 1921† Independent	May 17, 1921† Company
Broken	New York	$2.61	$7.20@$7.50	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75	$7.45@$7.75	$7.20@$7.75
Broken	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75
*Broken	Chicago	5.62	.....	.....	12.65	12.40	12.65	12.40
Egg	New York	2.61	7.20@ 8.00	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75	7.45@ 8.35	7.20@ 7.75
Egg	Philadelphia	2.66	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75	7.60@ 8.35	7.35@ 7.75
*Egg	Chicago	5.62	.....	.....	12.70	12.35	12.70	12.35
Stove	New York	2.61	7.50@ 8.00	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10	7.70@ 8.35	7.50@ 8.10
Stove	Philadelphia	2.66	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10	7.85@ 8.35	7.70@ 8.10
*Stove	Chicago	5.62	.....	.....	13.00	12.70	13.00	12.70
Chestnut	New York	2.61	7.50@ 8.00	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10	7.85@ 8.35	7.50@ 8.10
Chestnut	Philadelphia	2.66	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8.10	7.85@ 8.35	7.65@ 8.10
*Chestnut	Chicago	5.62	.....	.....	12.85	12.60	12.85	12.60
Pea	New York	2.47	5.25@ 5.75	5.75@ 6.15	5.25@ 5.50	5.75@ 6.10	**5.25@ 6.00**	5.75@ 6.10
Pea	Philadelphia	2.36	6.00@ 6.35	6.00	5.50	6.00	**6.00@ 6.25**	6.00
*Pea	Chicago	5.62	.....	.....	10.80	10.70	10.80	10.70
Buckwheat No. 1	New York	2.47	3.25@ 3.75	3.50	3.00@ 3.75	3.50	3.00@ 3.75	3.50
Buckwheat No. 1	Philadelphia	2.36	3.25@ 3.50	3.50	3.25	3.50	**3.50**	3.50
Rice	New York	2.47	2.50	2.50	2.50	2.50	*2.40@ 2.50*	2.50
Rice	Philadelphia	2.36	2.50	2.50	2.50	2.50	2.50	2.50
Barley	New York	2.47	1.50	1.50	1.15@ 1.50	1.50	1.15@ 1.50	1.50
Barley	Philadelphia	2.36	1.50	1.50	1.25	1.50	**1.50**	1.50
Birdseye	New York	2.47	....	2.50	2.50	2.50	2.50	2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago. † Advances over previous week shown in **heavy type**, declines in *italics*.
Freight rates do not include war tax. New York rates are f.o.b. Lower Ports; to Manhattan add 40c.@55c. to cover harbor charges.

Pocahontas and New River are quoted $6.25@$6.50, gross tons, f.o.b. Hampton Roads. At Philadelphia, Fairmont, Pool 34, is $5.50@$5.75, while screenings are $5.75@$6; Westmoreland mine run is $6, and $6.25 is quoted on Youghiogheny screenings.

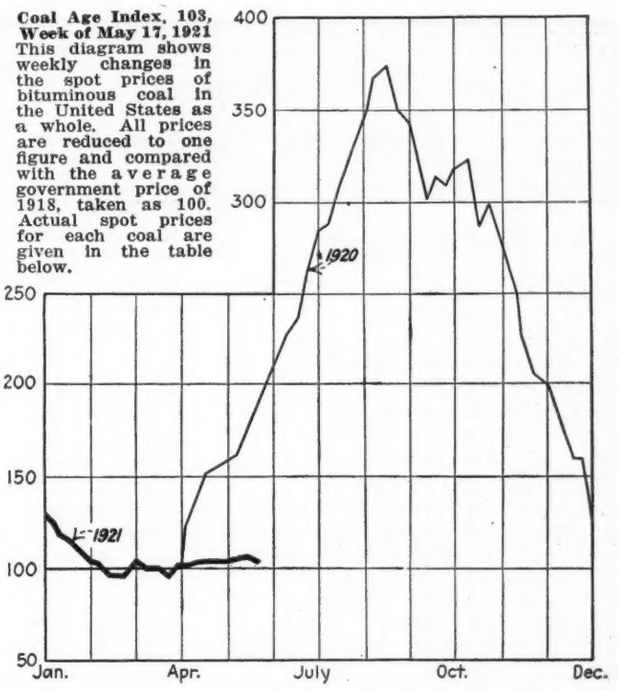
Lake dumpings for the week ended May 16, as reported by the Ore & Coal Exchange, Cleveland, were 718,567 net tons of cargo and 19,215 tons of fuel coal. The total for the season now amounts to 2,572,862 tons, as compared with only 849,083 tons for the same period in 1920. April westbound coal movement through the "Soo" was 259,288 tons of soft coal and 109,719 tons of anthracite. April receipts at the docks of Duluth and Superior were 203,270 tons, of which 83,058 tons were anthracite and 120,212 soft coal.



Adjustment of freight rates to Louisville, Ky., from the eastern and southeastern Kentucky fields have placed all grades of coal on a mine run basis, abolishing the differential between screened sizes and mine run. This places the eastern Kentucky districts in competition with southern Indiana.

The War Department is receiving bids, to be opened June 1, for the fiscal year July 1, 1921-June 30, 1922, for supplying coal to the nine corps areas. The Quartermaster General announced that it will be the policy of the department to accept for delivery during July and August as much of the coal as can be handled and stored at each of the posts.

New England all-rail movement for the first week of May was 2,457 cars, only a few less than for the preceding week, but over 800 cars less than during the corresponding week of 1920. The market in that section is very quiet and reserves are adequate for some time to come. Purchasers still find the difference between spot and contract too great to consider making season agreements. They are, however, taking more interest in quotations, and some operators, anxious to obtain running time, have taken larger orders on the open market for delivery over periods up to ninety days. Coastwise receipts have fallen off because of the marine strike, but this is causing no anxiety, as cargoes for storage had been taken regularly by many industries up to the time of the tie-up.



Coal Age Index, 103, Week of May 17, 1921 This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

Four men are known to have been killed in the former strike area in West Virginia on the Kentucky border, where a fierce outbreak occurred during the week. At this writing Federal troops are in readiness to leave for the support of the state police.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
Apr. 23 (b).....	6,815,000	122,086,000	8,523,000	162,076,000
Daily average..	1,136,000	1,274,000	1,420,000	1,683,000
Apr. 30 (b).....	6,970,000	129,056,000	8,928,000	171,004,000
Daily average..	1,162,000	1,268,000	1,488,000	1,672,000
May 7 (c).....	7,296,000	136,352,000	9,167,000	180,171,000
Daily average..	1,216,000	1,265,000	1,528,000	1,664,000

(a) Less 2 days' production during first week in January to equalize number of days covered for last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
Apr. 23.....	1,903,000	28,400,000	1,663,000	26,373,000
Apr. 30.....	1,945,000	30,345,000	1,841,000	28,214,000
May 7.....	1,633,000	31,978,000	1,891,000	30,105,000

(a) Less 2 days' production during first week in January to equalize number of days covered for last two years.

BEEHIVE COKE

Week Ended May 7 1921 (a)	Week Ended April 30 1921 (b)	Week Ended May 8 1920	1921 to Date	1920 (c) to Date
70,000	72,000	370,000	2,915,000	7,744,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

ANTHRACITE

There was a sharp slump in production during the week ended May 7. The total output was 1,633,000 net tons, 312,000 tons short of the figure for the last week of April. Cumulative production for the coal year now exceeds that of the corresponding periods of 1919 and 1920.

Purchasing of domestic sizes for storage is proceeding actively. Lake loading is practically confined to the vessel tonnage offering. Steam sizes are heavy, but much of this is going to storage piles, and prices are firm. In favor of early buying, retailers and shippers are calling attention to the increase in price which probably will come July 1 due to the Pennsylvania State tax of 1½ per cent on the mine price of all anthracite produced, effective that date.

COKE

Beehive coke production has again declined. During the first week in May 70,000 net tons were produced, a drop of 2,000 tons from the preceding week. Demand is almost non-existent.

The Frick company has reduced its wages, conforming to the reductions announced by the Steel Corporation. The cut was made effective May 16 and in most instances wages revert back to the scale of 1917.

ON REPRESENTATIONS BY Representative Zihlman of Maryland and others that the Chesapeake and Ohio Canal would have to cease operations unless it continued to transport coal for the Navy to the proving grounds at Indian Head, Md., the Navy Department has rejected recent bids for coal for the Proving Grounds at that point. The Canal was not low bidder in the recent bids and the new bids will give the Canal another chance.

Reports From the Market Centers

New England

BOSTON

Operators Unable to Induce Contracting—Hampton Roads Coals Easier, but Prices Firmer — Marine Strike Shows Signs of Failing—Anthracite Domestic in Fair Volume — Public Takes Better Hold.

Bituminous—As compared with a week ago the market shows no evidence of change. Unmistakably, however, there is more interest on the part of buyers than was the case on April 15. A few consumers who use perhaps less than 25,000 tons each are making an effort to diminish the spread between spot quotations and those for the contract period by trying to bring down the latter, either by making offers for the whole period or by trying to get delivery extended to Sept. 1 on the present spot basis. Without much question there are several shippers who have been so keen for current orders that they have agreed with certain customers to let the spot price carry through June, and even through July in some instances.

Operators have resorted to every known argument to induce buyers to make contracts, but next to no arrangements have been made as yet with manufacturers, or even with the larger utilities. The railroads in this territory have 70 to 90 days supply and in one case at least the operators have been notified again to suspend shipment for two or three weeks.

Receipts continue on a very light daily basis. All-rail the aggregate of contract tonnage is relatively small, and spot coal is also coming forward only spasmodically. The strike of marine workers has made a very material difference in receipts by water, for although there is not the least pressure here for coal the larger distributors had been taking in cargoes simply to store the coal.

Pocahontas and New River coals are quieter again, with only scattering business at Hampton Roads. The bulk of the coal dumped is for off-shore cargo and bunker use, together with Navy requirements; the tonnage coastwise has been almost negligible the past week. Prices, however, show the effect of overseas inquiry. Quotations are shown in the Weekly Review.

The marine strike is in much better shape, from the standpoint of boat-owners. In Boston harbor practically all the tugs are again in operation and several steamers that were tied up are again in service. On May 18, in Philadelphia, the crews of five Philadelphia & Reading Ry. tugs walked ashore in sympathetic strike with the employees of the Shipping Board and private owners, thereby promising to cripple the Reading fleet. The trouble proved to be short-lived, however, and the following day all five tugs sailed with barges in tow.

Anthracite—Aside from interruptions due to unfavorable weather along the coast, recent receipts of domestic sizes have been reasonably consistent. All-rail shipments have been coming forward in regular volume and there is everywhere observed among dealers a disposition to keep their storage as well filled as the situation will permit. Stove coal is behind on delivery because of the heavy demand but egg and chestnut can be had with fair degree of promptness. Broken is again in short supply, with the price being advanced from time to time.

The consuming public is buying in better volume at retail than at any time since March 1. Newspaper reports of the marine strike have had their bearing on this, especially in the coastwise towns.

Tidewater—East

NEW YORK

Domestic Coals Active — Many Orders for Egg and Stove — Producers Sold Ahead on Egg and Stove—Steam Coals Slow, but Quotations Firm — Bituminous Market Quiet—Some Activity Due to British Strike.

Anthracite—There is considerable activity in domestic coals. Egg and stove are heavily booked while chestnut is moving steadily. Shippers are able to induce buyers of the larger coals to include pea in their purchases and are thus able to prevent an overflow in the market.

Nothing definite has been announced so far regarding the action to be taken by the operators regarding the provisions of the Anthracite Tax Law, recently signed by Governor Sproul. The local trade is considerably interested in this law, which becomes effective July 1.

Individual operators are not having much trouble in disposing of their product. Domestic coals are in strong demand, even though their schedules call for higher prices. There are reports that some dealers are offering premiums for quick deliveries. While local retailers are placing orders for egg and stove principally, inland dealers are willing to take any of the sizes available. Many of the local dealers are now selling coal subject to prices at the time of delivery.

There has been a slight strengthening in the steam coal market. Although there has been an increase in the receipts of buckwheat No. 1 some shippers of good independent coals are quoting $3.75. The cheaper grades are quoted around $3.25. To keep down the stock of rice some of the smaller operators are storing it near their mines. Quotations were heard of $6 alongside for buckwheat No. 1; $5 for rice and $4 for barley.

Bituminous—There is a better feeling in the local market. Buying for commercial use does not show any material increase but shippers attribute the optimism to the inquiries received as a result of the English strike and the belief that the market will soon show an improvement because of the entrance of local buyers into the market. Inquiries are increasing in number and consumers are asking quotations on monthly shipments or on tonnages to run from July 1 to April 1 of next year.

Outside of many inquiries and some comparatively small contracts closed, the local trade has had little increased activity as the result of the British strike. There have been several calls here for gas coal to be sent to Mediterranean points.

Coal at the various local docks on May 12 showed a slight decrease over the tonnage on hand. Efforts of the trade to induce buying have had little effect so far. The reports of a freight reduction continue although witnesses appearing before the Senate committees in Washington ridicule the idea.

There has been no delay to shipping here because of the marine strike. All vessels receive bunker supplies promptly and those going to Europe are given a return supply, part of the freight carrying space being given to coal bunkers.

At Tidewater $6.15@$6.35 has been quoted for Pools 9 and 71 and $5.70@$5.90 for Pool 10. Mine prices are reported in the Weekly Review.

PHILADELPHIA

Anthracite Grows Even Stronger—Consumer Buying Steadily — Coal Tax Effective July 1—Buckwheat Only Active Steam Size — Bituminous Little Changed, With Signs of Improvement.

Anthracite—Demand for all family sizes has strengthened and dealers are now willing to take any size from egg to pea, but the call on the retailer is still centered on stove. Chestnut, which was just the least inclined to be free early in the month, has now reached the point where it is only being shipped to regular trade.

Shipment into the city and suburban points has not been so good the past ten days, and the customers of one of the large companies complain of not receiving sufficient coal to keep them going. The report is that they are shipping heavily to Tide for the time being, the intimation being that the coal is destined to New England points.

The amount of tonnage ordered ahead on the dealers' books has im-

proved considerably. This has been brought about by a general increase in the retail prices, the average addition being 25c. This makes standard prices for egg $13.75, stove and nut $14, and pea $11. Some dealers are still inclined to shade prices, but a stronger tone is evident, as coal has grown somewhat scarcer, and with the promise of a regular monthly advance of mine prices, dealers are cautious about quoting a fixed price, particularly those getting a large proportion of independent coal. In addition to this no one knows what disposition the producers will make of the new state tax, which will add about 12c. to the cost beginning July 1. On independent coal the tax item will be even higher, as it is rated at 1½ per cent of the cost at the mines.

Buckwheat is the only really active steam size and even the independents are getting close to the company price of $3.50. There are exceptions of some ordinary grades going for probably 25c. less.

Bituminous—Some profess to note a better tone and shipments probably are a little better. The greatest improvement has been in the textile trade, which is an extremely large factor in the industrial life of this district. This calls for heavier coal consumption, but even yet their purchases are meager, and they show little disposition to stock.

There is little change in the contract situation, the consumer showing but moderate interest, and some of the producers not particularly anxious to obligate themselves further. The attitude of the latter seems to be that buyers who are under contract are taking advantage of low market prices and will only call for contract shipments later in the season when a scarcity arises. The feeling is strong that good market prices are bound to prevail for a long period before the end of the present coal year. The railroads are heard occasionally to have closed contracts for a fair amount of tonnage at somewhat low rates.

BUFFALO

More Bituminous Moving — No Better Prices — Anthracite Stove Scarce — Lakes Loading Progresses, but Vessels Scarce.

Bituminous—Some shippers claim a little better movement but others deny it. A few railroads have bought coal on contract lately, paying about $3 for mine run, which is a trifle higher than they had been offering all along.

The manufacturer has a fair amount of stock on hand and prefers to wait to see how the fall trade is going to set in before stocking up any more. The worst of it is that the chief obstacle to business revival is just where it was and there is not much use of doing anything till it is out of the way. When wages come down so that railroad rates can follow the bituminous consumer will buy coal without waiting a day to see what is the result. He will know that the difficulty is out of the way. There are too many idle mines to begin operation as soon as the demand picks up, to hope for any better prices right away. Shippers see that and say that the profits are going to be small, but a larger volume will help. There is too much coal yet begging for a market for the good of the producing end of the trade.

Anthracite—There is complaint that since April the falling off in demand has been large and shippers fear that the fall will see such a demand that it cannot be met. One reason for the slackness is that the working people are doing so little work that they have no money, although they buy mostly in the fall anyhow. One heavy retailer says that the present May falling-off is largely because the prices were fixed early, while nothing was done last year till nearly the end of May.

The Lake trade is brisk, but as a rule the sailing has been made at vessel owners' option, which means that a great part of the coal is still here. The amout cleared for the week ended May 7 was 106,487 net tons, 26,587 of which was for Chicago, 49,400 for Milwaukee, 8,500 for Duluth and Superior, 27,500 tons for Waukegan and 1,000 tons for Ashland. No regular freight rate has been established.

Coke—Of course, there can be no revival till there is activity in the iron trade, and there is no indication of a stir there. The iron ore carriers report a continuation of the former slackness and express a fear that it is going to last perhaps all summer.

BALTIMORE

Tug-Boat Handlers' Strike Hitting Harbor Deliveries — Bunker Business Also Falls Off — Line Demand Fails to Strengthen — Hard Coal Expected to Advance June 1.

Bituminous—Soft-coal selling in the Baltimore district is very flat. To the natural dullness has been added the fact that the tugboat crews are out on sympathetic strike with the Shipping Board employees. This has brought to a halt almost all the deliveries along the harbor front. Bunker business has also fallen off, and the whole situation is one to bring little joy to the coal man.

Line demand has failed to strengthen, and much cheap coal is offering on the market on quick turn-over. Prices on best coals are the only fairly firm feature. Pool quotations are shown in the Weekly Review. Westmoreland ¾-in. gas has fallen below $3, there being considerable offerings as low as $2.80. Westmoreland slack is bringing around $2.15, while West Virginia gas slack is $1.75. The best grades of mine run gas are around $2.50.

Anthracite—The stage seems to be fated for a setting of higher prices both at wholesale and retail after June 1. There are some independents whose leases are such that it is claimed that higher prices will be necessary, and there would be no surprise here to see further advances in the entire wholesale list, both company and independent. The retail trade of Baltimore absorbed the advances made at wholesale on May 1, but some of those prices are not guaranteed to last even until June 1. There is a practical certainty therefore, that any further material advances at wholesale will have to be met here with a retail increase.

Demand here is light and the public apparently can not be aroused to the "buy early" idea. Many people are now out of work in this section and money is not so plentiful as it was last spring. Coal men will have to work pretty close to a cash basis this time to come out right, especially under the generally uncertain trading conditions.

HAMPTON ROADS

Demand Has Improved—Prices Stiffen —Seamen's Strike Hampers Movement.

During the past two weeks over 75,000 tons have been shipped from this port to the United Kingdom, and several more loaded vessels are lying in port ready to sail to the same destination, but awaiting crews, the shortness of men resulting from the seamen's strike preventing their sailing at once.

This strike has been felt during the last week, although the general opinion is that it will not be successful.

The price of Pools 5 and 7 has jumped to $5.75@$6, with little supply in sight and considerable demand. Pools 1 and 2 have remained approximately $6.50@$6.75, with some dealers quoting $7. Good demand for all grades has developed, with numerous inquiries from all sections.

Activities at the piers for the week ended May 12 are represented by the following statistics:

N. & W. piers, Lamberts Point—	
Cars on hand	1,311
Tons on hand	58,854
Cars dumped May 1 to 11, incl.	2,405
Tons dumped	171,522
Tonnage waiting	8,935
C. & O. piers, Newport News—	
Cars on hand	1 918
Tons on hand	95,560
Cars dumped May 1 to 11, incl.	3,793
Tons dumped same period	203.714
Tonnage waiting	9,870
Virginian Ry. piers, Sewalls Point—	
Cars on hand	1.245
Tons on hand	50 500
Cars dumped May 1 to 11, incl.	3,324
Tons dumped same period	156.243
Tonnage waiting	34,550

Northwest

MINNEAPOLIS

Movement of Coal Declines—Buy-Early Warnings Are Discounted — Hope of Even Lower Prices Delays All Markets.

The axiom of leading a horse to water, but inability to make him drink, fits the coal business in the Northwest. The movement to the interior, during April, was about half of that of a year ago. The amounts moving in all-rail were no larger. Urgings that people buy coal now and spare themselves some uncomfortable experiences a few months later seem to be of no avail. Neither steam trade nor domestic shows the slightest move for increased buying.

Railroads have not been contracting for the season, because they have considerable tonnage due on old contracts. Until their traffic picks up, they do not see much need of contracting for next summer and later. Like everyone else, they are agreeable enough to the idea, for everyone but themselves.

The retail trade shows no life whatever. Buying is much less than usual for this time of year. Retailers are making every effort to induce consumers to put in a portion of their winter's needs, realizing how difficult it will be to handle the rush of business all at once, if it holds off. Last fall it became necessary to hire extra trucks, at whatever price was asked, to get orders out. As a result, many retailers hardly broke even on a portion of the business they handled, and all the time they were being charged with profiteering because of the cost of coal.

It is difficult to handle the situation as conservatively as many in the trade feel should be done. The extreme predictions, involving nearly threats, are not regarded as wise. On the other hand, if the entire purchasing of coal for fall is left until then, it will not be possible to deliver to everyone who may need it. People will forget the times when early cold weather made trouble for them but they do not forget the time when a mild fall allowed them ample time during the early winter months to get in their coal.

MILWAUKEE

Buyers Hold Off for Lower Prices, Which Dealers Declare Impossible—Heavy Flow of Cargoes by Lake.

There is little prospect of any market activity until consumers get over the belief that lower prices will come to those who wait. The 40c. hard coal drop is sneered at, despite the fact that it was accompanied by a reduction in the service cost from curb to bin of 25c. per ton. Anthracite egg is $15.55, nut and stove $15.80, pea $14.05 and buckwheat $12.10; carrying charges are 75c.

Coal is coming in freely by Lake. The one big byproduct plant in this port has almost filled its receiving yard, preparatory, it is said, to a shut-down until fall. Dock companies are urging early buying in order that they can make the most efficient use of their storage facilities.

May receipts up to this time aggregate 77,803 tons of anthracite and 157,120 tons of soft coal, making a total of all grades thus far this season 432,606 tons. Last year's receipts during the same period amounted to 64,290 tons of anthracite, and 64,931 tons of soft coal or 129,221 tons in all.

Bituminous prices are as follows:

	Steam	Retail
Splint or Yough. lump	$8.25	$9.75
Splint or Yough. pile run	7.75	.....
Splint or Yough. screenings	6.50	.....
Hock. or Pitts. lump	8.00	9.50
Hock. or Pitts. pile run	7.50	.....
Hock. or Pitts. screenings	6.25	.....
Pocahontas lump, egg and nut	13.50	13.50
Pocahontas mine run	8.50	9.75
Pocahontas screenings	7.25	.....
Illinois and Indiana lump	7.25	8.50

Inland West

CLEVELAND

Slack Market Less Active — Lake Coal Moving Faster Than It Can Be Dumped —Production Jumps.

Bituminous — The outstanding feature of this coal market is the sharp rise in the rate of output at the eastern Ohio mines. Last week production was fully 57 per cent of capacity compared with less than 50 per cent previously. Impetus which has been given to the Lake movement by the recent reduction in freight rates is responsible for the improvement.

The failure of industrial plants to make any material gains in activity has prevented any growth in the demand for industrial fuel. Users are still clinging to the belief that lower prices are coming. This feeling is based largely upon the hope of a general readjustment of freight rates.

A tendency toward a stiffening in price of prepared steam sizes has been a recent development, but the change has not been sufficient to be reflected in higher prices for spot coal. Producers in some cases are reluctant to turn out prepared sizes and this is keeping the supply down and also preventing the accumulation of large slack stocks.

Lake—Facilities for dumping coal at the lower ports are no match for the volume of fuel now being shipped there. More than 900,000 tons have been brought to the Lake since the season opened. The difficulty lies in getting cargo space, due to the delay in the ore season. Some vessels which were unable to obtain cargoes in the Northwest have been ordered to come down light for coal. Lake carrying rates for 1,250,000 tons of coal have been fixed at 50c. to the head of Lake Superior and 60c. to Milwakee. The shipper will furnish bunker coal at $5.50 a ton.

Pocahontas and Anthracite — Retail prices follow:

Anthracite — Egg and grate, $13.75; chestnut, $13.90, stove, $13.95.

Pocahontas—Shoveled lump, $11; mine run, $9.50.

Domestic Bituminous — West Virginia splint, $10; No. 8 Pittsburgh, $8.15; Cannel lump, $12.15.

Steam coal—No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 ¾-in. lump, $6.

Receipts of bituminous coal during the week ended May 7 amounted to 863 cars; divided, industrial 593 cars, retail 270 cars; as compared with 1,128 cars the preceding week, indicating a decline of some 300 cars.

CINCINNATI

Low-Priced Smokeless Contracts Depress the Market — Lakes Jam Adds Distress Coal—Retail Market Sluggish.

Smokeless coals have dropped 25c. This, with the weakness in the bituminous market has brought about an unsatisfactory state of affairs. Some point to current talk of slack contracts having been signed at $3 to steel mills in the northeastern part of the state as an indication that further cuts may be expected. Slack is now $2.75@$3. Mine run is still quoted $3.50 but a drop has been made in egg to $5@$5.25 and in lump to $5.25@$5.50. Few of the companies are naming prices for June delivery.

The jam of cars at the Lake ports is having its effect on the bituminous market. At Russell on the C. and O. as well as the nearer yard, Silver Grove, across the river from here, there is a growing surplus of loads, while on the L. & N. loaded cars are also accumulating. Where demurrage has to be faced there has been a cutting of price to hasten disposal.

Some slack has sold below $1.40. Mine run sold down to $1,75. Kentucky mines are offering slack $1.60@$2 and mine run, $1.85@$2.10; West Virginia operators have met these and are slighty lower on lump, which can be bought around $3.

Retail prices have shown no change nor has there been any improved inclination on the part of the domestic consumer to buy. A recent statement shows that scarcely 25 per cent of the usual amount of household coal has been placed in the cellars.

CHICAGO

Heavier Steam Coal Buying, but on a Close Basis — Domestic Yards Well-Stocked—Smokeless Softens.

During the past few days there has been some activity in the steam market. Numerous manufacturing concerns have at last awakened to the situation facing them and are actually worried over the prospect of a coal shortage. Purchasing agents of these companies have come into the market and made purchases in hundred car lots.

These purchasing agents, however, are following the same method of procedure. They canvass all the coal companies producing a certain grade and then give the business to the company making the closest prices. As soon as it became noised about that purchases were being made on a large scale by these agents, a number of operators began to compete with each other and as a result, coal was bought at 25c. a ton cheaper than it should have been had the operators in question maintained their balance a little more evenly. Outside of these purchases of spot coal, there has been no particular activity in the steam market, as no contracts of any magnitude have been closed during the past week.

Reetail dealers report but little business, in fact, the volume of business booked so far this month is 'way below normal, considering the time of the year. A majority of the Chicago retailers have their bins loaded to capacity and as the public is not buying the way it should, it can be easily understood that there will be but slight activity in the market, so far as Chicago is concerned, during the next few weeks.

A short time ago retailers were very much worried over the smokeless coal situation. They feared that inasmuch

as the English mines were down, European Governments would come into the market and make heavy purchases. This feeling was quite general and for a week or so there was considerable demand for smokeless coals. Under this stimulus, prices on mine run strengthened very materially and many sales were made. It now appears that Europe is not rushing into the American market and Chicago retailers are regretting their haste. The market on this coal has shown considerable signs of weakening and it has been an easy matter during the last few days to purchase mine run as low as $3.

DETROIT

No Sales Improvement Is Apparent—Receipts Are Light and Free Coal Is Scarce.

Bituminous—Instead of the broader demand which some of the Detroit jobbers and wholesalers expected might be developing at this time, the local market continues to present a nearly comatose aspect in both the steam and domestic divisions. While some are inclined to regard the situation as due to the fact that consumption of steam coal has been largely reduced by the curtailed activity of factories and industrial plants, others attribute part of the slackness of demand to a withholding of orders by consumers who believe they will be able to provide for their requirements in the open market.

Jobbers and wholesalers maintain, however, that lower prices are an impossibility, during the continuance of present wage schedules at the mines. They also point out that the dilatory policy of large consumers of steam coal is certain to react on these concerns.

It is pointed out that while the steam plants are holding back orders, their reserves are being consumed and that when these stocks are gone, the buyers will be compelled to take coal at whatever price it may be obtainable, as the alternative of suspending operation of manufacturing activities. Very little coal is now being sent into Detroit and free coal on track is difficult to find.

Smokeless egg and lump is quoted $5.50 at the mines, mine run $3.50 and nut and slack $2.25. Ohio 3-in. lump is offered at $3.25; 2-in. lump at $3.15, ¾-in. lump at $3, mine run at $2.25 and nut and slack at $1.90. West Virginia 4-in. lump is $3.50, 2-in. lump is $3.25, ¾-in. lump at $3, mine run $2.50 and nut and slack about $2.

Anthracite—As yet very little buying of anthracite has been done by the local householders. Retailers have fair supplies on hand.

ST. LOUIS

Growing Demand for Domestic of Better Grades — Cheaper Coals Move Slowly — Steam at Standstill — Shortage of Domestic Sizes Threatens.

There continues to be a good householder call for Carterville for storage. This also includes a fairly good tonnage of anthracite and coke. West Virginia smokeless is out of the market and Arkansas is too high.

Small users of Mt. Olive and Standard are not buying any yet for storage, although a little is moving for current use on account of the wet, cool weather. Apartments are beginning to put in their storage supplies of Standard. This will be under full swing within the next month, but at cost to the dealer. This business is going around $4.50@$5 for immediate delivery. Contract prices are somewhat remote at this time. Steam business is poor in St. Louis and almost none at all from the outside.

Business has not resumed the large industrial centers of the Middle West sufficiently to keep pace with the growing domestic demand. The latter is not noticeable except in the larger places.

COLUMBUS

Better Domestic Demand—Steam Business Is Still Spotty—Considerable Lake Tonnages Being Loaded.

Producers are having a better run of domestic orders. While the increase is not marked, still it is taken as a forerunner of better things. The increased domestic business is coming from the cities and larger towns. While retail stocks are generally fair, still some dealers are running short, especially on the better grades.

During the week ended May 7 a total of 127,650 tons of Lake coal loaded at the Toledo docks of the H. V. Ry. In 1920, up to May 8, only 24,434 tons had been loaded by these docks. So far this season a total of 386,564 tons has been loaded. The T. & O. C. docks at Toledo loaded 28,404 tons during the same week, making a total of 45,724 tons for the season.

Retail prices are fairly steady. Hocking screened lump retails $6.50@$6.75 while other grades can be purchased at $6.25. Hocking mine run sells around $5. West Virginia splints are $7.50 for lump and $6 for mine run. Pocahontas retails around $9.50 for prepared sizes. Anthracite is $13@$14.50.

There is no strength in the steam trade. Some days a few orders appear but this is generally followed by a period of quietude and as a result the market is extremely spotty.

Production is still at a low point with the exception of eastern Ohio, where Lake trade and large industrial contracts are taking a better tonnage. The Hocking Valley is producing only about 20 per cent and the same is reported from Crooksville, Cambridge and Tuscarawas. Pomeroy Bend is running slightly better with an output of about 23 per cent of normal.

West

DENVER

Summer Storage Activity Increases—Production Is Heavier—Prices Unchanged.

Summer storage is showing an increase. In Denver, for example, retailers have stored 40,000 tons of bituminous as against 10,000 a month ago. There is not much buying, but the freight rate rumors, having been quieted, there is a greater confidence among retailers.

Cold winds and rain have helped out. This is another reason why the Colorado operations have taken on an encouraging outlook, the total tonnage for the week ended April 30—158,189—being within 40,000 tons of the output of a year ago. Of a lost tonnage of 108,453, the equivalent of 78,425 tons or 35.4 per cent, was brought on through a lack of orders.

Bituminous lump is $5.50 at the mine, although one of the largest concerns is endeavoring to maintain a price of $5.65. The Moffat R.R., which was blocked by a rock slide as the result of a heavy snow storm the middle of April, is open again, and an average of 20,000 tons of bituminous is coming into Denver weekly.

Southwest

KANSAS CITY

Sharp Jump in Domestic Demand—Oil Cuts Steam Outlet—Prices Rally.

The upward turn, predicted a week ago, in the demand for domestic grades has been realized. The condition has switched to such an extent that some companies are already having difficulty in filling their orders and an advance in the price may be looked for.

Oil continues to displace considerable tonnage of steam grades in Texas, Louisiana, Arkansas, Kansas and Nebraska, and some companies are having difficulty in disposing of steam sizes. This was to be expected on account of manufacturing being at a low ebb and complicated further by outside districts, such as Illinois, dumping their surplus coal in Missouri river markets.

Arkansas lump for May shipment is $6.25, mine run, $4.50, slack, $3.50; Kansas lump and nut is $5, mine run, $4.25@$4.50, mill, $4, slack, $3.75; north Missouri lump is $4.50, mine run and washed slack, $3.85.

South

LOUISVILLE

Better Inquiry and Some Improvement in Tonnage—Lake Movement Aids Operators—Retailers Stocking Heavily.

Smokeless prepared sizes are very hard to secure, due to scarce orders for screenings, resulting in comparatively light production. Movement of Kentucky coals to the Lakes has resulted in larger production of screenings, and a weaker market as a whole, screenings being around $1.65@$1.75.

Large receipts of western Kentucky coal are expected as a result of the advanced freight rates which favor western Kentucky by 50c. a ton. Movement of river coal continues free, heavy rains resulting in fine boating stages

in the Ohio. A number of barges have been received in the past week.

Retailers are stocking coal more freely than in years past, for fear of future tight markets. It is pointed out by some of the traffic experts that with the lack of other tonnage to congest terminals, coal cars should travel better this summer and fall, resulting in larger tonnage movement with the same amount of equipment, as cars are in better repair than they were, due to railroads being caught up with repairs on other classes of equipment.

BIRMINGHAM

Steam Market Slow—Good Demand for Domestic, but Output Is Small—Prices Firm.

The commercial coal market is about as dull as it could be. Spot business shows no improvement and there are no contract offerings except proposals sent out by the Seaboard Air Line Ry. for fuel coal for the next year. The Southern is expected to call for bids shortly.

Industrials who have no stocks or contracts are buying in small spot lots and are not inclined to contract for future fuel supply. Railroads are not taking more than one-third of minimum called for in contracts, due to curtailed transportation business, few boats are moving from Southern ports for lack of cargoes, and the demand for bunker coal is relatively small.

Mines are falling behind on deliveries against domestic contracts, due to the fact that they have not sufficient outlet for the steam product to enable the production of the tonnage of domestic sizes required. Inquiry for lump coal is good but due to the aforesaid conditions there is a limit to the business that can be booked. Mine prices are quoted in the Weekly Review.

Commercial mines are operating one and two days per week where any attempt is being made to run, while numerous small operations are still idle entirely. Labor is shifting very little, as employment in the mining industry is as good as elsewhere.

Canada

TORONTO

Market Quiet—Spring Orders Comparatively Light—Shipments Decreased Since Opening of Navigation.

Domestic orders for anthracite are not being placed as freely as last year. Coal is coming forward in moderate quantities, but shipments have fallen off somewhat in volume since the opening of navigation. The yards are fairly well stocked and dealers have no difficulty in meeting present demands except as regards stove.

Quotations for short tons are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.25@11.75
Domestic lump	12.50
Cannel	16.00
Wholesale f.o.b. cars at destination:	
¾-in. lump	7.75@ 8.75
Slack	6.50@ 7.00

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Conditions Presage Heavier Independent Operations — Opposition to Mine-Cave Bills.

Demand continues to increase although the price as yet has not risen sufficiently above company prices to permit many independents to resume operation. Each week, however, conditions keep improving, so it now looks as if the time were not far distant when both independent and line mines would be in full operation. None of the washeries have started operations as yet.

The governor has signed the anthracite tax bill. There seems to be a feeling that this bill may prove unconstitutional when it is taken to the courts. It has been semi-officially announced that a number of the mines in the Scranton district will close down if the mine-cave bills are passed. Petitions are being circulated requesting the governor not to approve the bills.

PITTSBURGH

Heavy Lake Shipments from District, but Little Movement Up Lakes—Competition of Other Districts — Gas Coal Prices Hold Up.

Rate of coal production in the district, about 40 per cent for the rail mines for some time past, has been saved from a decrease by the mining of Lake coal. The line demand has been still lighter in the past fortnight, but Lake shipments have been heavy since the 28c. freight reduction May 5. Coal at lower ports is now estimated at close to a million tons.

Very little coal has gone up the Lakes as vessels are not operating to any extent. A boat cannot operate without having a down cargo as the coal rate, set at 50c. for this season, would not begin to pay. Last year's rates were 65c. on coal and $1 on ore. The market on Lake coal has settled down to approximately a uniform price of $2.50, for ¾-in.

Demand for steam is even lighter than it was two or three weeks ago. The district is feeling the competition of Connellsville and Fairmont coal, but does not meet the prices, merely losing the trade of consumers who are willing to change their coal. Slack produced on account of the shipment of Lake coal is a drug on the market and can easily be had at $1.75. There have been occasional offerings of Fairmont Pool 60, at $1.65, while Connellsville steam could be had at about this figure, good grades of Connellsville by-product being offered freely at $2.

Pittsburgh district gas coal holds up very well, $3 being frequently obtainable for screened. The resultant slack is in poor demand and goes at $2, which would make about $2.65 for mine run if there were any demand for it.

CONNELLSVILLE

Frick Company Reduces Wages After Independents — Not Enough Furnace Coke to Make a Real Market—Production About Stationary.

In connection with the general wage reduction decided upon by the U. S. Steel Corporation, to be effective May 16, the H. C. Frick Coke Co. has posted notices of its new scale, which agrees only in part with the scale of Nov. 10, 1917, to which the independents in the region reverted on April 1, as some of the jobs are priced somewhat higher than in the old scale.

Demand for furnace coke is practically absent altogether, while for foundry coke it is extremely light. Operators in sounding out the market experience difficulty in finding consumers who take an interest in prices. Most operators are indifferent whether they sell or not since at best they could not secure much of an operation and it seems cheaper to be idle entirely. Meanwhile there is free offering of coal at low prices, good byproduct being readily had at $2 while coal for steam raising can be secured under $1.75.

The last important transaction in furnace coke was the one reported a week ago, 500 tons a day for 30 or 60 days, buyer's option, at $3.40. The spot market is quotable at $3.25@$3.50 for furnace and $5@$5.50 for foundry.

The *Courier* reports production in the week ended May 7 at 26,780 tons by the furnace ovens, and 23,740 tons by the merchant ovens, making a total of 50,520 tons, an increase of 1,810 tons.

UNIONTOWN

Coal and Coke Markets Continue Dull —Even Distress Tonnage Is Hard to Sell—Shortage Impending.

Both coal and coke markets have recorded no change from the dull tone which has prevailed for the past several months. There appears to be a number of inquiries going the rounds but in following them up operators have found them to be of the "bubble" variety, put out largely by consumers to get a line on the market. Actual sales being made are few and far between and some tonnage again is going begging.

One jobber this week had 500 cars of good quality coal on his hands. The tonnage was offered from one car up, $1.75@$1.80. He still has the coal.

Most trade authorities are becoming apprehensive over the continued fuel buyers' strike in the fear that all will return to the market at once. It is pointed out that no improvement has been made in our railroad situation, and, given an over-abundance of coal tonnage, another car shortage would develop. It is to avoid such a situation that operators are almost pleading with their consumers to commence buying now when prices are admittedly at their lowest and the railroads hungry for business.

Quotations of various grades of coal range $1.75@$2.25. Coke prices range $3.25@$3.75 for furnace and $4.25@$4.75 on foundry.

CENTRAL PENNSYLVANIA

Production Shows Gains—Operators Prepare for Busy Times—Prices Firm —No Contract Buying.

Coal mining is making considerable gain. Production for the week ended May 7 was 11,777 cars as compared with 9,915 cars the same week in April. The second week of May is showing gains ranging from 400 to 500 cars a day over the same period in April and operators are hopeful that the increase will continue.

While production in northern Cambria County is still low, operators are going ahead with arrangements for a normal production which they feel sure will come later in the summer. Machinery is being installed in a number of mines and at others the operators are erecting houses during the slump. There is no change noticeable in prices and but few contracts are being closed, the market still being from hand-to-mouth.

EASTERN OHIO

Heavy Lake Movement Increases Production — Contract Inquiries Lag, but Industrial Outlook Is Better—Coal Accumulates at Lower Ports.

Production in the week ended May 7 registered the largest for any week since early in January, when 361,000 tons were produced, or 57 per cent of rated capacity. Output for the year to date is 5,291,870 tons or an average of 47 per cent of potential capacity.

Tonnage mined for railroad fuel account amounted to about 35 per cent, the balance going to industry and to Lake. Thus it may be seen that the freight reduction from the mines to Lower Lake ports has stimulated the movement considerably.

Association mines, it is said, worked 50 per cent of possible work time and the output amounted to 63 per cent of rated capacity, this showing being a marked improvement over recent weeks.

A slight car shortage, amounting to 13 per cent, continues on the Wheeling & Lake Erie, with other lines having ample facilities for all needs. This shortage of cars is reported to be caused by the large number of loads of Lake cargo coal. This is going forward faster than it is being dumped and stocks are heavy. The railroads have some 14,000 cars in port and arrivals are running over 2,000 cars daily. Boats are being offered freely for down cargoes but the demand for tonnage is reported light.

Contract inquiries from industrial users continues light, regardless of the fact that prices are scraping the very bottom. While there is a larger consumption because of some improvement in the general situation, these needs continue to be supplied in the spot market. Slack is $1.75@$2; mine run, $2.20@$2.35 and ¾-in., $2.45@$2.65.

UPPER POTOMAC

Conditions Are Unimproved — Mine Idleness General—No Contracts Being Made.

Mines in the Upper Potomac and Georges Creek regions were still for the most part in idleness during the week ended May 7, as a result of the lack of orders. Dullness was especially marked throughout the area along the Western Maryland. There was no spot buying in evidence and what free coal was produced could be secured at a buyer's price.

Rather than sell under such unfavorable conditions most operators made no effort to resume work, at the same time declining to take on contracts at prices offered.

FAIRMONT AND PANHANDLE

Better Outlook—Production Rate Unchanged—Inquiries Appear But Prices Still Too Low for Acceptance.

FAIRMONT

Although production was not greatly in excess of that for recent weeks, a slight improvement in northern West Virginia conditions was discernible in the week ended May 7. Inquiries were increasing but carried such low prices that but little business resulted and mines had to be content with a limited amount of contract orders.

NORTHERN PANHANDLE

Railroad fuel and a few outstanding contracts constituted the only production outlet during the week ended May 7. However, industrial conditions were slowly improving, and it was believed that better business might be looked for in the near future. Only an occasional spot order was being placed and Lake shipments were not increased in volume.

Middle Appalachian

HIGH-VOLATILE FIELDS

Demand Unimproved — Production Maintained with Difficulty—Fresh Outbreak of Thacker Lawlessness.

KANAWHA

Conditions were practically unchanged during the first week in May. So little coal was sold that production was not at the maximum over 14,000 tons on any day. Tidewater coal sold as low as $1.75 at the mine but the general quotation averaged $2@$2.25.

LOGAN AND THACKER

Notwithstanding general apathy in the market production was maintained at about 50 per cent in the Logan region. Much of the coal produced was for storage, some going to the Lakes, but little to Tidewater. Both spot and contract markets were unimproved.

Thacker production was somewhat increased, although there was no marked demand. However, some contracts were being made which stimulated production a trifle. The Mingo coal field is again the scene of shootings and disorders and the Governor has asked for Federal troops in addition to ordering the entire state police force to proceed to the scene. At this writing a merchant at Sprigg has been killed and two employees of the White Star Coal Co. at Merrimac have been seriously wounded. The outbreak, the worst since the Matewan battle, has all the appearances of a prearranged attack which is being centered on the towns of Merrimac, Rawl, Sprigg and Matewan, W. Va., and McCarr, Ky.

NORTHEASTERN KENTUCKY

Production continued at the rate of about 25 per cent of normal. Some improvement was noted in the demand for gas and byproduct but in general the industrial situation held down buying except in the most limited quantities. Prepared sizes were not in heavy demand and Lake shipments were too small to aid production.

VIRGINIA

Mines continued to produce at the rate of about 50 per cent of normal with the output not going much over 90,000 tons. General market conditions made it impossible for producers not having contracts to get out any coal, spot orders being extremely scarce. Nearly the entire output was being marketed on a contract basis.

LOW-VOLATILE FIELDS

Better Contract Market — Production Increases as Conditions Improve—Seamen's Strike Slows Tidewater Movement.

NEW RIVER AND THE GULF

Although there was no further gain in New River production, the rate of output was well sustained during the first week of May. The best demand was at Tidewater for bunkerage. Most of the 3,200 cars daily were going to seaboard and although a heavy tonnage was there awaiting dumping, it was being rapidly reduced. Slack was still off as a result of contracting for Western delivery on the basis of $3. The marine strike was interfering with Tidewater shipments during the latter part of the week. A much better de-

mand in evidence in the Winding Gulf region brought production up to 50 or 60 per cent of capacity. Dumpings increased at Tidewater although the seamen's strike was slowing that movement down as the week came to an end. Western shipments were fairly large, much of the coal being under contracts at $3.50 a ton.

POCAHONTAS AND TUG RIVER

A gradual but steady gain in Pocahontas output brought production over the 200,000-ton mark. "No markets" represented a loss of approximately 235,000 tons and there was a further loss of about 6,000 tons, due to slow placements.

With additonal contracts placed, both Eastern and Western shipments were larger. More coal was also moving to Tidewater.

Tug River mines were operating under more favorable conditions, indicating a general improvement in the region and a somewhat better market. As a matter of fact, comparatively little coal was being sold on a spot basis so the improvement may be attributed largely to new contracts.

Middle Western

MIDWEST REVIEW

Steam Trade Very Dull — Domestic Buying Is About Normal — Contracts Still Being Withheld.

Sales representatives covering the territory in the Middle West report that it is a very difficult feat indeed to sell steam coal at any kind of a price. The average salesman in off the road is not so optimistic concerning the industrial situation as he was two weeks ago. The market for domestic coal is fairly satisfactory, in fact, about normal for this time of the year, but the steam market is about as poor as anything experienced in the career of the oldest coal man in the territory.

In spite of the temporary depression in the steam coal market, most mines in Indiana and Illinois are running more regularly. The explanation of this is that operators are filling their domestic orders at a satisfactory price, and taking a chance on the open market on the resultant steam sizes.

Very few labor disturbances or arguments have been reported lately from the coal producing fields of the Middle West. The men quite properly realize the handicap under which the mine operators are working and are consequently showing a tendency to attend to business and really work for their wages now that they have an opportunity. Some operators are talking in a half-hearted way of reducing wages of mine labor, but the common rank and file show no inclination of tackling the problem.

On the other hand, purchasing agents for some of the largest industrial concerns and railroads in the Middle West have stated to the operators that they will place no contracts until mine labor is reduced. The opinion among the operators at this writing appears to be decidedly against any reduction in mine labor.

INDIANA

Steam Demand Slightly Increased—Low-Priced Contracts Made.

With some of the Indiana factories gradually resuming or increasing their production, the demand for steam coal is somewhat more active than it has been. However, it is far from satisfactory and prices are very low. As an indication of the condition, recent contracts were let in Indianapolis for public coal supplies which called for coal to be purchased at the mines for as low as $2 a ton.

Public utilities of the state are getting steam coal from Indiana mines at around $2.50 a ton. Jobbers declare the amount of free coal is not proportionate to the low demand. Indianapolis retailers are selling Indiana mine run at $6.75 a ton and prices range upward to $9 for Brazil block coal.

SOUTHERN ILLINOIS

Better Work Time as Domestic Demand Revives—Steam Sizes Are Heavy and Prices Soften.

Domestic demand in the Carterville field is so far ahead of the steam call that a serious situation begins to manifest itself. Some mines are getting close to full time, but it is half-time on an average and several are still idle. Screenings and nut coal are blocking the tracks at most mines. Large orders for domestic sizes are not accepted. They are usually cut in half with no immediate shipment promised. Association operators are holding to their price on domestic sizes, but are weak on steam. They are coaxed along this way by the independent mines who are offering screenings as low as $1.75. Mine run is also weak, with independent prices down to $2.75. The railroad tonnage is light. Some few contracts are reported, with no prices given.

A small railroad in southeastern Missouri succeeded in contracting with some of the "nickel shooter" jobbers in St. Louis for its supply of lump, egg and nut at $3.10 for the year. The tonnage is not big.

Conditions in the Duquoin field are somewhat similar to the Carterville situation. Three days is the average for those who work, but most mines are idle, and those working are getting the independent Carterville prices, with a reduction here and there.

Mt. Olive conditions show a slight improvement, and prices are pretty well maintained. St. Louis domestic sizes are $3 and outside $3.25. Steam sizes are well sold up on contract, and railroad shipments are rather good. Considerable steam is moving north to the Chicago field.

Standard field conditions show no improvement. If there is any change it is backward. Screenings and nut are impossible to move at any price, and lump in some cases is not a first seller. It will, however, be impossible to get lump shortly unless the screenings call gets better. Railroad shipments are light and the country call for all sizes is unusually poor.

WESTERN KENTUCKY

Slightly Better Domestic Demand—Steam Movement Still Drags—Rate Increase Coming.

As a result of better retail stocking there has been some increase in production and movement of prepared. Screenings are in heavier supply, which however, are being disposed of at very fair prices.

It is held by some operators that the recent advances announced by the L. & N., while increasing rates on western Kentucky coals 15c. to Louisville, have increased rates on screenings and mine run to a far greater extent from eastern Kentucky, which will favor steam coal movement somewhat from this field, and enable the operator to sell at a better price in competition with eastern Kentucky.

In view of the fact that the advanced rates become effective on June 16, it is expected that there will be some increased movement of coal from all fields for stocking purposes prior to that date. Advance in western Kentucky freight rates, to Louisville, however, will result in keener competition from southern Indiana mines.

Prices are holding fairly steady and although mines are not busy, they report that operations are showing some little improvement.

West

UTAH

Retail Price Cut Made to Stimulate Business—Mine Reductions Appear Impossible.

The coal situation here remains unchanged. In the hope of getting its customers to buy coal for storage purposes, the Standard Fuel Co. of Salt Lake City has reduced its prices 50c. a ton for cash with order. Lump will cost $9.50 and the smaller sizes $9. On all orders where credit is desired the regular prices will be charged. In making the announcement the company says that it appears very unlikely that there will be any reduction in the price of coal for summer storage this year.

Retailers cannot reduce the price unless they can obtain a reduction in either freight rates or mine price. A reduction in freight rates seems out of the question. Producers maintain that they cannot reduce the mine price unless wages are reduced, which is impossible. The company is not able to say what effect the announcement will have but the feeling is that the reduction is not sufficiently large to be attractive, especially as it is a cash proposition. None of the other retailers have made a move toward reducing prices so far.

Foreign Market And Export News

British Orders Are Increasing

March Exports Indicate Certain Firm Markets—Chartering of Boats Subsides —Orders Coming Forward But Terms Are Not Readily Acceptable.

Great Britain coal exports for March, 1921, compared with 1913, the last normal pre-war year, show a considerable decline. Although less than for March, 1920, this year shows a revival in certain countries, especially the Netherlands, Spain, Italy and the Argentine.

Pronounced increases were registered in those countries from which large quantities of foodstuffs are sent to Great Britain, in return for which coal is sent. It is clearly illustrated by this increase that on account of the interchange of commodities these markets will always show a preference for British coal, provided the price is at all an economic one.

Comparison of March exports are as follows:

	Tons		
	1913	1920	1921
Total exports	5,596,744	2,406,151	1,968,078
Sweden	281,468	160,759	78,853
Norway	201,410	77,249	44,587
Denmark	252,905	106,490	148,599
Netherlands	166,439	9,686	113,713
Belgium	220,687	91,169	10,938
France	1,072,300	1,184,031	437,659
Portugal	88,230	18,011	29,024
Spain	233,147	27,810	127,642
Greece	49,598	10,988	37,083
Italy	841,966	204,290	332,480
Algeria	112,917	70,853	64,623
Chile	48,076	418	179
Brazil	206,160	12,733	6,097
Argentina	290,459	39,075	98,520
Egypt	183,000	70,160	66,857
British India	34,328	59	27,049

British chartering of steamers to bring coal from the United States subsided during the second week in May, according to the *London Times*. The slump is due probably to the length of time occupied in crossing and also to the limited facilities for unloading steamers of the tonnage required. The amount on the way or expected shortly to be on the way from the United States is unofficially estimated in freight and market circles as more than 100,000 tons.

A large number of offers have been received from British fuel buyers, but owing to the fact that the terms are rather unacceptable no large orders are resulting. British purchasers demand that the coal go forth on a Welsh form of charter with a 2 per cent address commission. They stipulate that the coal be delivered at specified British ports by a certain guaranteed time. Penalties running as high as £100 a day are provided for in case American shippers are unable to make the deliveries upon the date fixed. There is a possibility that business may develop out of the overtures, however.

While most of the American coal that has been shipped during the past few weeks to Great Britain has been ordered for bunker purposes, there is an increasing number of contracts placed here for commercial and industrial uses.

Italian Market Strengthens

British Strike Causes Shortage—New Orders Placed Here—Prices Strengthen —Bunkerage Coal for British Account —Outlook Improves.

Italy has placed a new order for coal in this country, it was learned recently. There is already in effect a running contract with American companies providing for shipment of about 25,000 tons a month. Because of the strike in the United Kingdom, the requirements of the Italian Government have caused the commission here to place a new contract. Future requirements of Italy will depend upon the turn of events in Great Britain.

Italy is again short of coal. As a result, the railroad traffic will be reduced. A number of industrial establishments are already suffering from the lack of sufficient fuel. This shortage is chiefly due to the British strike.

Fairly good quantities of coal are going to British bunker stations and Mediterranean ports. An order reported lately was for two cargoes of 5,000 and 6,000 tons of Pool 1 for shipment to Great Britain. It is understood that the price was around $6.50, Hampton Roads. The freight rate was placed at 35s., a considerable strengthening of the market, bringing the c.i.f. basis up to $13@$13.50.

Daily Average Coal Receipts at Italian Ports During March, 1921

(In Metric Tons)

Genoa	1,235
Savona	1,080
Torre Annunziata	1,077
Leghorn	1,051
Messina	1,037
Civitavecchia	977
Brindisi	969
Spezia	965
Ancona	952
Trieste	839
Palermo	852
Venice	710
Taranto	705
Naples	684
Barletta	603

THE SWISS GOVERNMENT had the intention of reducing coal prices beginning April 1 by 100 francs per ton. This reduction however will not take place during the next few months. The Coal Import Co., as well as the Federal Railways, have large stocks on hand, and in order to provide the industrial establishments with cheaper coal the National Assembly at a recent session proposed to allow the Government a credit up to 22 million francs, which sum may be turned over to the Coal Import Co. at any time for the purpose of enabling the latter to reduce the coal price accordingly. In this connection it may be mentioned that up to the present time the monthly coal imports from the United States are by far exceeding those of any other country.

New York Exports Gain in March

There were 11,681 tons of coal and coke exported through the Port of New York in March, 1921. This consisted of 6,987 tons of anthracite, 3,459 tons of bituminous and 1,235 tons of coke, with a total valuation of $128,511. In March, 1920, exports were 10,370 tons of anthracite, 4,649 tons of bituminous and 1,349 tons of coke.

Comparison of the average price per ton exported through the Port of New York in March of the past five years shows the following:

	Anthracite	Bituminous	Coke
1917	$7.70	$6.09	$12.43
1918	7.66	6.03	15.15
1919	10.34	12.37	14.21
1920	9.06	9.33	12.04
1921	11.31	9.36	13.82

PRELIMINARY FIGURES REGARDING the production of bituminous coal in Prussia for the year 1920 show that the output of 292 mines (the same as in the previous year) amounted to 127,057,135 tons as against 112,031,455 tons in 1919. The sales reached 126,417,455 tons as compared with 111,707,550 in the previous year. The number of men employed was 707,881 against 664,020 in 1919. Lignite production also shows an increase, from 76,096,015 tons in 1919 to 91,979,395 tons in 1920, an increase of 15,883,380 tons. The number of mines in operation was 352 as against 314 in 1919 and the number of men employed rose from 104,445 in 1919 to 133,442 in 1920.

THE EXTENSIVE LIGNITE deposits in the district of Böhlen near Leipzig are about to be exploited. These deposits are the property of the Saxonian State. The first machinery has already been installed, and it is expected that within a few years the output will be of considerable importance. The amount of 200 million marks has been appropriated for the development of these deposits.

A REPORT FROM ROTTERDAM is to the effect that a company, styled the Netherlands Spitzberg Co., Ltd., has just been formed with a capital of 7 million Dutch florins for the purpose of exploiting the coal deposits of the Island of Spitzberg. Before the war, Dutch capitalists intended the exploitation of those coal fields which are said to contain immense quantities of the best bituminous coal. The island also contains considerable deposits of iron ore.

DRASTIC REDUCTION of passenger and freight trains was introduced in Austria on May 11 as a consequence of the disorders in Upper Silesia, which have interrupted coal deliveries for the Austrian Government.

MINE And COMPANY NEWS

ILLINOIS

The Security Mine at Duquoin, operated by the **Security Coal & Mining Co.**, of Chicago, has again resumed operations after a thirty-day shut down. During the time the mine was idle, extensive improvements were made in the main shaft, rescreening plant, boiler room and about the mine in general.

Mine No. 58 of the **Springfield District Coal Mining Co.**, at Hewittville, has been closed down. The shut down is due in part to the low ebb in the coal market, and throws 400 men out of work. The company has headquarters in Springfield.

INDIANA

A slate fall recently in a room of Mine No. 10 of the **Vandalia Coal Co.**, Sullivan, resulted in the death of one man and the serious injury of another. James Johnson, whose head was crushed by the fall, died in the county hospital. Another who was working with him, sustained a badly injured back.

The Ebbo Valve Coal Co., Sullivan County, has filed papers with the secretary of state showing a capital stock of $300,000, of which $200,000 is preferred stock, and organized for the purpose of mining for coal, oil, gas, etc. The directors are W. P. Zimmerman, J. B. Mershon, U. R. Smith, M. D. Manson and H. P. Smith.

The Ft. Dearborn Coal Co., an Illinois corporation, has filed incorporation papers with the secretary of state, for the purpose of doing business in Indiana, $5,000 of the stock being represented in this state. The company will engage in the coal and coke business. The Indiana agent is W. R. Garstand, of Indianapolis.

Edward Allais, Sr., and his company, which operated the Mecca Mine several years ago, have opened a new mine a few miles north of Rosedale and intend to start operation by July 15.

Walter Bledsoe, well known coal operator of Terre Haute, Ind., is president of the **Indianapolis Steel Products Co.**, which is constructing a modern manufacturing plant east of Indianapolis. The company will make bar iron products and possibly springs and reinforcement for concrete.

KENTUCKY

The Kentucky State Board of Charities & Corrections has placed orders for 34,000 tons of Kentucky screenings, at prices ranging $1.80@$2.25, deliveries to start after May 1, and to be completed as soon thereafter as the operator desires, but specifying the time and amount which must be delivered. **The R. C. Tway Coal Co.**, Louisville, got 19,250 tons of the lettings, at $2.25; the **Frankfort Coal & Elevator Co.**, 2,500 tons at $1.80; **the Gordon Mining Co.**, 6,000 tons at $2; **Western Kentucky Coal Co.**, 6,000 tons at $2. The coal is to be delivered to specified state institutions in Frankfort, Lakeland, Lexington, Bowling Green, Eddyville, etc.

The Consolidated Mining Co., of Columbus, has purchased a working mine at Tremont, Harlan County, from the **Vinson-Kolb Coal Co.** The property consists of 260 acres of partly cannel coal.

The May Coal Co., of Alphoretta, capital $100,000, has been chartered by A. J. May, B. L. C. May and Julia May.

The Parker-Elkhorn Coal Co., of Prestonburg, has increased its capital from $25,000 to $50,000.

Two $5,000 Liberty Bonds belonging to Clayborn Baker, bookkeeper, $125 belonging to J. R. Harrison, proprietor of the mine commissary, and $100 of the company's money, comprised the loot of safe blowers at the Victoria Mine of the **Hart Coal Corporation**, near Madisonville, recently.

The Corydon Coal Co. property was sold at a Master Commissioner's sale recently for $23,000. Its appraised value was $63,000. The court may not sustain the sale to **R. W. Turner**, the successful bidder.

The St. Bernard Coal Mining Co., miners, jobbers and retailers, operating in western Kentucky, has only been operating about two mines part time, but will increase operations, and plans to stock its big string of retail yards in Louisville, Nashville, Paducah and elsewhere, taking advantage of the present dull period to lay in good stocks.

Movement of river coal into Louisville in April showed a big gain, and reports indicate a large movement for May, as a heavy tonnage has been contracted for. Records for the first four months as compared with the same months of last year are:

	Tons 1921	Tons 1920
Jan.	1,400	3,022
Feb	970	7,800
March	1,035	4,040
April	14,533	7,520
Total	17,938	22,382

There is a considerable amount of stocking being done by retailers and some industrial consumers who have capacity for storing. It is reported that the Standard Oil Co. of Kentucky has been taking a good deal of cheap coal at its Riverside Refinery at Louisville, where it has a big submerged concrete stocking pond.

MISSOURI

A company headed by **J. H. Warren** of Independence has leased 1,000 acres of land near Slater and has a drill on the Henderson farm, near Knobnoster, testing for coal. The company also intends to test for oil and gas if coal is not found in paying quantities. A number of Kansas capitalists are said to be interested in the venture and to have $200,000 available if coal of paying veins is unearthed.

Frank Martin, two miles south of Otterville, discovered a fine vein of coal on his land. The vein is 12 feet wide and four feet deep and lies only three feet below the surface.

NEW YORK

Newtown Creek Coal & Coke Co., Inc., has been incorporated with a capital of $75,000. The directors are Dominick Luzino, Brooklyn; Joseph J. Porte, Corona, and E. C. Rohman, Queens.

The Charles J. Hunter Coal Co., has been organized in Brooklyn, capital, $25,000, incorporators C. J. and K. Hunter and R. Roeder.

The Brooklyn Nevins Coal Co. has been incorporated with capital of $50,000 by M. Smith, J. and S. Levine.

OHIO

The McBard Coal Co., of Cincinnati has acquired yards in the western part of the city which were formerly operated by the Brokamp Supply Co., at Summitt.

Hearings in the suit of the **Greenough Coal Co.**, a West Virginia corporation, against the **Ohio & Kentucky Fuel Co.**, for breach of contract, came up for trial in the sessions of the United States District Court in Cincinnati. The defendant company asked that the case be taken from the jury.

Papers have been filed reducing the authorized capital of the **Royal Collieries Co.** from $75,000 to $50,000.

The Ashtabula Coal & Supply Co. has been chartered with a capital of $75,000 to do a retail business. The incorporators are G. H. Leathers, E. W. Huelster, K. F. Schmidt, Mott G. Spaulding and M. W. Gray.

The Underhill Coal Mining Co. has been chartered with a capital of $100,000 to mine coal in the Massilon field. Incorporators are Ida M. Pfister, J. Minar, Charles J. Stewart, D. M. Mulhern and Hazel Q. Mills.

W. J. Harahan, president of the C. & O. and the Hocking Valley Ry. has made his first inspection of the Toledo docks of the company early in May. A total of more than 258,000 tons has already been loaded at the H. V. Docks. M. S. Connors, general manager of the Hocking Valley and other officials accompanied him on the inspection trip.

The Michigan-Ohio-Indiana Coal Association announces that one of the features of the coming annual meeting will be a $25,000 Loree anthracite breaker in full operation. So far as the program has been arranged, the speakers wil be Thomas L. Lewis, Charleston, W. Va., secretary of the New River Coal Operators' Association, who will talk on "Co-operation of Coalmen" and C. E. Maurer of Cleveland of the Glens-Run Coal Co., whose subject will be announced later.

Transportation of coal on the Ohio River has rarely been of the volume of the present time. Storage piles are accumulating in all of the towns and cities from Huntington in the East to Louisville in the West. Small cities between Cincinnati and Louisville, which for years have passed up the river and relied upon rail movement have been getting their supply in while the stage of the river is favorable.

PENNSYLVANIA

A banquet will be held June 2 by the western Pennsylvania division of the National Safety Council in Uniontown to wind up the course of lectures and discussions being held there every two weeks for several months past for coal mine superintendents, foremen, etc. The banquet will be held at the Asbury Methodist Church.

Judge George W. Maxey, of Scranton, has fined the **People's Coal Co.** Frank Christian, president; John G. Hayes, general manager, and James Pearn, superintendent, $250,000 for contempt of court in violating an injunction restricting mining under certain areas in West Scranton. The action is the outgrowth of the seizure by the city of the Oxford mine of the defendant company a year ago. Frequent damage to buildings situated in the area in which mining was supposed to be restricted led the city to believe mining was going on there despite the injunction. An attempt to investigate was met by the company with resistance.

An action to recover $150,000 was instituted in the Supreme Court recently by the **Jamison Coal & Coke Co.** against **John W. Galloway.** The suit is based upon a $150,000 note issued by the **Silver Creek Coal Co.**, Pittsburgh, May 1, 1920, payable within one year on the eMllon National Bank, Pittsburgh, and delivered to the defendants. Prior to date of maturity defendants jointly indorsed the note and sold to the plaintiff for value. Upon presentment at the Mellon National Bank payment upon the note was refused.

The Coalmont-Moshannon Coal Co., is installing electrical equipment at its operation near Houtzdale. Among the new installations will be two haulage locomotives, cutting machines, a complete lighting system and stationary and gathering pumps of the most improved type.

Desirous of relieving the acute shortage of houses, the coal department of the **Delaware, Lackawanna & Western Co.** is contemplating the sale of 50 building lots in the vicinity of the Truesdale colliery, at Hanover, and the Loomis colliery, at Dundee, Hanover Township. Sites will only be sold to employees of the company who desire to build in the near future.

WEST VIRGINIA

Operations on a large scale in the Williamson field are expected to follow the organization of the **Wilhelmina Collieries Co.** The capitalization of this concern has been fixed at $250,000. General offices are to be at Williamson. Leading spirits in the new company are: S. H. Goodloe, Jr., H. A. Goodloe, Harry Scherr, C. P. Early and Lant R. Slaven, all of Williamson.

The following West Virginia coal concerns have recently increased their capital stock: **Salkeld Coal Co.** from $150,000 to $750,000; **Atlantic Smokeless Coal Co.** from $200,000 to $250,000; **Canyon Coal & Coke Co.** from $200,000 to $500,000; **Standard Fuel & Supply Co.** from $20,000 to $50,000; **Ridgelin Coal Mining Co.** from $100,000 to $150,000; **The Barbour-Upshur Coal Co.** has reduced its capital stock from $75,000 to $50,000. **The Pinnacle Block Coal Co.** a Virginia corporation, has been granted authority to transact business in West Virginia. **The Flanagan Coal Sales Co.,** incorporated under the laws of the State of Delaware, has been given authority to transact business in West Virginia. Another corporation which has been granted the same privilege is the **Atlantic Coal & Iron Co.,** incorporated under the laws of the State of New Jersey, this company having acquired a large property in the New River field not long ago.

The following West Virginia coal companies have been dissolved and have surrendered their charters: **Empire Coal & Coke Co.; Gwendolyn Coal & Coke Co.; Manbor Coal Co.; West Virginia Bi-Products Coal Co.; Kimball Coal Co.; Pond Creek By-Products Coal Co.; Superior-Thacker Coal & Coke Co.; Guyan Valley Coal Co.; W. & C. Coal Co.; R. G. Bailey Coal Co.**

With conditions in the steel trade slightly improved, the **Whitaker-Glessner Co.,** which has steel plants at Wheeling and elsewhere, has found it necessary to resume operations at its mines on Coal River, which have been closed down since the steel mills suspended operations several months ago. Another company at whose mines operations have been resumed for the time being at least is the **Cannelton Coal Co.,** operating on Smithers Creek where this concern has five mines in operation.

Development of coal land's near Roshy's Rock on the Wheeling Division of the Baltimore & Ohio near Wheeling is promised through the purchase of about 200 acres of coal land by Pittsburgh coal people. In order to mine coal at this point it will be necessary to sink a shaft and it is understood that the new owners are planning to undertake that as a step preliminary to the development of the territory purchased.

New machinery was recently installed at the plant of the **E. L. & W. Coal Co.,** operating near Fairmont. The company has just installed a new hoist and has also put in a short-wall cutting machine.

Huntington business men have just launched the **Brownfield Coal Co.** for the purpose of developing coal territory in the Logan field Operations are to be conducted on a large scale as indicated by a capitalization of $250,000. Huntington is to be the headquarters of the company. Leading in the new enterprise are: A. J. Dalton, John A. Kelly, E. L Hogsett, John F. Grossenbach and C G. Campbell, all of whom are prominently identified with the Logan region.

Development of coal territory in Marion and Harrison counties is presaged by the organization of the **C. L. & W. Coal Co.,** which has a capital stock of $100,000. Clarksburg capitalists are largely interested in this concern, among them being, Harry E. Davisson, Vera B. Fisher, J. E. Low, W. W. Walters, Glenn F. Williams, all of Clarksburg.

The Stone Castle Co. is a new concern just organized for the purpose of engaging in the production of bituminous coal near this city. Its capital stock is fixed at $50,000. Charleston people, as follows, are behind the new company: L. G. Summerfield, E. R Burrell, B. F. Ford, S. L. Boiarsky and L. M. Enicks.

The first coal has been taken from the mines just being opened by the **Hite-Barnes Coal & Coke Co.,** organized a year or more ago, this company having property on Indian Creek not far from Lowesville in Monongalia County. This concern is still engaged in opening new headings. The coal owned is in the Sewickley vein, the company having about 142 acres in the Lowesville section. A large number of miners' dwellings have also been built.

BRITISH COLUMBIA

The output of the Nicola-Princeton fields is to be materially increased. There is no doubt that the production of the **Coalmont Collieries** will be much greater in the early future than is now the case. **The Princeton Coal & Land Co.** is proceeding with development and work is either under way or planned in other parts of the district. **The White Lake Collieries** has been incorporated with a capital of $400,000 to develop some 3,000 acres of coal lands in the vicinity of West Summerland. Slopes are being driven and three seams, described as a first-class blacksmith and steam coal, are being opened up. It is the intention to haul the product to Penticton for use on the C. P. R. lake steamers.

There was a slight increase in production in March as compared with February. The mines of Vancouver Island report an output of 134,937 tons as against 128,376 for the previous month. In the Crow's Nest Pass District the improvement was a trifle more marked.

COAL OUTPUT FOR THE MONTH OF MARCH, 1921

VANCOUVER ISLAND DISTRICT

Mine	Tons
Canadian Western Fuel Co.	47,447
Canadian collieries	
Comox	40,567
Extension	17,691
South Wellington	8,234
Nanoose Wellington	4,976
Granby	15,822
Old Wellington (King & Foster)	199
Total	134,937

NICOLA-PRINCETON DISTRICT

Middlesboro Collieries	4,564
Fleming Coal Co.	1,784
Coalmont Collieries	5,477
Total	11,825

CROW'S NEST PASS DISTRICT

Crow's Nest Pass Coal Co.	
Coal Creek	36,291
Michel	25,908
Corbin Coal & Coke Co.	6,540
Total	68,739
Grand Total	215,501

NOVA SCOTIA

Eleven of the fifteen collieries of the **Dominion Coal Co.** have resumed operations and 8,000 of the 10,000 employees are at work. Some of the mines had been closed down and others had been working short time for some months. The opening of navigation on the St. Lawrence River and the British coal strike are said to have decided the managers to resume operations on a large scale.

Traffic News

The I. C. C. has decided that the rate increase of last August shall apply to intrastate shipments of coal in North Dakota. Lignite coal is one of the principal commodities of state shipments in North Dakota, amounting to 50 to 60 per cent of the intrastate traffic This coal also competes with coal moving from the head of the Lakes.

In his testimony before the Senate Interstate Commerce Committee investigating the railroad situation **Julius Kruttschnitt** of the Southern Pacific R.R. pointed out that the alleged excessive rates on coal had not cut coal traffic or driven mine operators out of business. Mr. Kruttschnitt said that in 1920 the railroads had an increased locomotive fuel cost of $196,429,760 over 1919. He pointed out that the faulty car distribution of the railroad administration forced the I. C. C. to shift coal cars to coal fields from points where they were scattered at the termination of federal control and that this service had to be rendered by the railroads regardless of expense. The roads consumed 13 per cent more locomotive fuel in 1920 than in 1919 at a cost of $64,572,121 and the increased price of fuel was $131,857,639. The average cost of coal to the railroads in 1920 was $4.20 a ton as against $3.32 in 1919. In December 1920 the fuel cost $4.80 a ton. He estimated that the outlaw railroad strike caused an 11 per cent increase in fuel consumption per gross ton mile. Among increased expenses of 1920 over 1919 he listed $5,855,000 chargeable to coal and ore wharves, partly labor. Referring to water competition, he said the government had constructed locks and dams in the Warrior River, Ala., for carrying coal from the Alabama coal fields to seaports on the Mexican Gulf, tonnage which heretofore has been carried exclusively by the railroads.

The commission has decided that the rates maintained by the Director General of Railroads on coal from mines at Hillsboro, Ill., to the plant of the **Schram Glass Mfg. Co.** at Hillsboro, were not unreasonable.

In the complaint of the Traffic Bureau of Nashville, an I. C. C. examiner recommends dismissal of the plea that the rates to Nashville from mines in Tennessee served by the Tennessee Central R.R. of 30c. per ton on coal from June 25, 1918 to Oct. 28, 1919, and of $1.20 thereafter to the end of Federal control, and from mines in western Kentucky served by the L. & N. of similar rates were unreasonable. As the roads admitted that the rates on coal to Clarksville, Tenn., from mines in western Kentucky served by the L. & N. exceeded the rates in effect from the same mines to Nashville, the examiner recommends that the complaint on this score be sustained and that reparation be awarded on shipments of western Kentucky coal to Clarksville after Nov. 6, 1919.

Oral arguments will be heard by the I C. C. in Washington on coal cases as follows: June 1 **Cameron Coal Co.;** June 15, **Consolidated Coal Co.**

Industrial News

Chicago, Ill.—The House of Woodward Beach, advertising engineers located for the past five years at 17 North La Salle St., is organizing as a closed corporation with a capital stock of $50,000.

Pittsburgh, Pa.—The district sales office of the Morrison & Risman Co., dealers in new and relaying rails and accessories, has been removed to 1123-1124 Park Building.

Washington, D. C.—Retail monthly coal prices of the Government Fuel Yards will hereafter be issued by the Department of Commerce in co-operation with the Department of Labor instead of by the Department of Labor, as heretofore.

Washington, D. C.—Senator Johnson, Cal., has introduced a bill authorizing the Rolph Navigation & Coal Co. to sue the United States to recover damages from collisions of its boats with naval vessels in San Francisco Bay.

Washington, D. C.—The coal mining industry ordinarily consumes over 80 per cent of the total production of black powder and permissible explosives and 15 per cent of high explosives, according to a report of the Bureau of Mines on the use of explosives in 1920. All classes of consumers used larger quantities of explosives in 1920 than in 1919, the principal increase being in coal mining, occasioned by the greater output of coal during the year. The Bureau reports that in 1920 there was used for coal mining 8,790,505 kegs of black blasting powder; 37,273,255 pounds of high explosives and 45,222,130 pounds of permissible explosives.

Personals

R. L. Reed, vice-president of the Walter Bledsoe Co. has taken charge of the Cincinnati office. He formerly was located with the company in Terre Haute and Indianapolis. **J. M. Humphrey,** who opened the office about two years ago has resigned.

Tom Dew, who has been connected with the Western Fuel Co. for about a year, has succeeded **D. P. Coleman** as the manager of that company's Cincinnati office, and **R. A. O'Connell** formerly in charge of the Vincent Klob Coal Co.'s office has been appointed as Mr. Dew's assistant.

L. H. Stone, manager of the Cincinnati office of Jewett Bigelow and Brooks spent a week in the east recently, principally in New York.

C. A. Clyburn, manager of the Bluefield office of the Kentenia Coal Sales Co. put in several days in the Cincinnati office going over the sales situation.

C. H. Loughbridge, Finance Building, Philadelphia, advises the appointment of **Albert J. Riker** as manager of the New York office at 2046-47 Whitehall Building.

Arch Coleman, of the City Fuel Co., Minneapolis, spent a few days in Chicago recently.

W. P. McMillan, pioneer coal operator in Illinois, has become connected with D. E. McMillan & Bro., of Chicago. Mr. McMillan opened up and developed the first mine near Christopher.

A. K. Mordue, sales manager of the Thomas W. Mordue Co., of Chicago was in Cincinnati the better part of a week overseeing the transfer of the office from the First National Bank Building to the new Dixie Terminal.

O. W. Seaberg, formerly sales agent of the Seaboard By-Products Coke Co of Jersey City, N. J., has been appointed sales manager of the New York Office of the C W. Williams Fuel Co., Inc.

J. C. Dick announces his resignation as chief of the natural resources subdivision of the Income Tax Unit at Washington, D. C., to resume the practice of consulting mining engineer Attention will be given to the technical questions in the federal tax law involving valuation of mines and other natural resources as applied to invested capital and depletion deductions

G. F. Hallman, superintendent of the anthracite sales department of the American Ice Co., Philadelphia, was recently married to Miss Bertha Bechtel at Norristown.

H. B. Cornog, vice-president of the Cortright Coal Co., spent a week recently at the Clarksburg, W. Va., operations of the above company.

F. E. Herriman, president, Clearfield Bituminous Coal Corporation is visiting the general office at Indiana, Pa., the mines and particularly the new operation and town at Commodore on the Cherry Tree & Dixonville R.R. The corporation is a subsidiary of the New York Central; the output of its ten operations is all delivered to the railroad for engine fuel.

Edward R. Knowles, C. E. E. E. is now associated with Murrie & Co., Inc., New York City, in charge of pulverized coal and gas fuel engineering work.

N. L. Van Hart, who was formerly connected with the C. G. Blake Co., in Cincinnati, renewed old associations last week when he spent a day or two visiting with former trade acquaintances. He is now located in Connersville, Ind., and is interested in mines in southeastern Kentucky.

Colonel D. B. Wentz, president of the Wentz Co., who has been on a vacation and hunting trip to the Far East, is expected in Philadelphia shortly, as he is reported to be on his way home after an absence of three months.

A. B. Schaeffer, of the sales force of the Lehigh Coal & Navigation Co., is seriously ill at his home in Reading, Pa.

L. L. Faust, of Windber, Pa., where he is engaged in bituminous production, called on the Philadelphia wholesale trade recently.

Obituary

Death of **J. W. Campbell**, aged 46, removed one of the leading figures in the development of the Connellsville coke region. Mr. Campbell for the past 20 years had been connected with the H. C. Frick Coke Co. for many years as a division engineer.

Edward Hickey, one of the locators of the Anaconda lode, died at his home recently, in Butte, Mont., at the age of 80 years.

Joseph S. Hammond, chief stockholder and holding certain official positions in the Widnoon Coal Mining Co., Lawsonham, Pa., and for a long time superintendent of the Soldier Run mine of the Rochester & Pittsburgh Coal Mining Co.'s operations, died at Hot Springs, Ark., on April 29 after being out of health for some years. His home was at Reynoldsville, Pa., where the funeral was held on May 4.

Edward Ritter, a pioneer coal operator, said to have sunk the first coal mine near the great Edwardsville District, Illinois, died recently at his home in Edwardsville. In 1861, with his father, he bored a well and seeing signs of coal, went to the depth of 300 feet where a rich vein was struck.

Daniel D. Brodhead, for many years connected with the sales staff of Maderia, Hill & Co., New York City, died at his home in Maplewood, N. J., on April 25. Funeral services were attended by many of the coal trade.

Samuel Newton Poston, aged 82 years, the father of E. M. Poston, president of the New York Coal Co., died at his son's residence recently from infirmities due to advanced age. He was a retired hardware dealer of Nelsonville, Ohio.

W. Harry Brown, pioneer coal operator, who until his retirement two years ago, was prominently identified with Pittsburgh's commercial life, died recently in that city. He was long active in coal development and organization work. Just after his retirement he sold a large holding to the Pittsburgh Steel Co.

Association Activities

Indiana Retail Coal Merchants' Association

Several hundred coal men arrived in Indianapolis recently for the sessions of the association.

In an effort to awaken the public to what is considered the danger of a real crisis in the fuel supply, the coal association, through Secretary E. E. Yeagley, announced that the public was invited to attend the meetings.

The convention opened May 4 with the "Better Business Exposition" at the Tabernacle, a comprehensive display of coal appliances, devices for handling, etc.

E. E. Heller, president of the association, delivered his annual address May 5 when the convention session was called to order. Addresses were delivered that afternoon by C. R. Moriarity of Cincinnati; Otto J. Thjomoe, Chicago, and B. E. Lundblad, Sullivan. That night the association held its annual banquet at the Independent Athletic Club, when the Rev. J. Ambrose Dunkel, pastor of the Tabernacle Presbyterian Church, and Howe S. Landers of Indianapolis delivered addresses.

On May 6, George Otis Smith, director of the United States Geological Survey, J. W. Clark, of St. Louis, and B. R. Inman, of Indianapolis, manager of the Indiana State Chamber of Commerce spoke.

E. J. Payne, president of the Lake and Export Coal Corporation of West Virginia and Indiana, declared that with coal production below normal, the present outlook is critical. R. R. Yeagley, secretary of the association, urged the public to avoid another coal shortage by buying coal early this summer.

Oklahoma Retail Coal Dealers' Association

The association, in annual convention at Oklohamo City, indorsed and voted to promote in every way possible the campaign to induce the public to purchase its coal supplies during the summer months. It was predicted that prices would advance during the late summer and winter months, and that those who buy their coal now will effect a substantial saving. The retailers will spend liberally in an advertising campaign to induce the consumers to buy their fuel early.

St. Louis Coal Club

The St. Louis Coal Club at its seventh annual banquet elected officers as follows: president, Frank Tirre, of the North Breese Coal & M. Co.; first vice-president, Wm. H. Riester, Donk Bros. Coal & Coke Co.; second vice-president, P. H. Greenlaw, secy., Fifth and Ninth District Coal Bureau; secretary, Elmer Kleekamp; treasurer, H. C. Trier.

Trade Catalogs

Vanadium (The Master Alloy). Vanadium Corporation of America, New York, N. Y. Pp. 49; 8 x 11 in.; illustrated.

Coxe Stoker. Combustion Engineering Corporation, New York, N. Y. Pp. 29; 6 x 9 in.; illustrated; bulletin C 2-1921—Advertiser.

Use of Pulverized Coal Under Central Boiler Stations. By John Anderson, chief engineer of power plant, Milwaukee Electric Ry. and Light Co. Published by Combustion Engineering Corporation, New York City. Pp. 30; 6 x 9 in.; illustrated.—Advertiser.

C-H Iron-Clad Solenoids. Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 873. Pp. 4; 8½ x 11 in.; illustrated.—Advertiser.

Curtis Steam Turbines. General Electric Co., Schenectady, N. Y. Bulletin 42201-B. Pp. 16; 8 x 11 in.; illustrated. Describing Curtis steam turbines of 100-kw. to 3,500 capacity.—Advertiser.

Publications Received

Speed with Economy — Barney-Ahlers Construction Corporation, New York, N. Y. Pp. 16; illustrated. Showing various types of coal pockets, piers, moderate-size industrial buildings, etc, constructed by the corporation.

Second Annual Report of State Mine Inspector of the State of North Dakota. Period ended Oct 31, 1920. Public Document No. 24; Pp. 24.

Eighth Annual Report of State Mine Inspector of the State of Colorado. Period ended Dec 31, 1920. Pp. 67.

Water Gas Apparatus and the Use of Central District Coal as Generator Fuel. By William W. Odell. Bureau of Mines, Technical Paper 246. Pp. 28. Prepared under co-operative agreement with the Illinois State Geological Survey and the Engineering Station of the University of Illinois.

Coming Meetings

Michigan-Ohio-Indiana Coal Association will hold its annual meeting June 15, 16 and 17 at Cedar Point, Ohio. Secretary, B. F. Nigh, Brunson Bldg., Columbus.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York City.

National Industrial Traffic League will hold its spring-summer meeting at the Winton Hotel, Cleveland, Ohio, on May 25 and 26, Executive secretary, J. H. Beek, 1207 Conway Building, Chicago, Ill.

West Virginia Coal Mining Institute will hold its semi-annual meeting June 7 and 8 at Fairmont, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Rocky Mountain Coal Mining Institute will hold its summer meeting the early part of June at Salt Lake City, Utah. Secretary, F. W. Whiteside, Denver, Colo.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary, J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13 and 14.

American Society for Testing Materials will hold its annual meeting at the New Monterey Hotel, Asbury Park, N. J., June 20 to 24. Secretary, C. L. Warwick, 1315 Spruce St., Philadelphia, Pa.

Illinois Mining Institute will hold its spring outing the early part of June on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on June 3 and returning on June 5. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Institute of Chemical Engineers will hold its spring meeting, June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodworth Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill., Secretary, Calvin W. Rice, 29 West 39th St., New York City.